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STAFF APPRAISAL REPORT

KOREA

AGRICULTURAL WHOLESALE MARKETING PROJECT

March 1, 1982

PROJECTS DEPARTMENT  
East Asia and Pacific Regional Office

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## CURRENCY EQUIVALENTS /1

### Currency Unit - Won (W)

US\$1.00	=	W 685
US\$1 million	=	W 685 million
Won 1	=	US\$0.0014
Won 1 million	=	US\$1,460
Won 1 billion	=	US\$1.46 million

## MEASURES

1 hectare (ha)	=	3,000 pyong
1 pyong	=	3.3 sq m

## ABBREVIATIONS

AFDC	-	Agriculture and Fishery Development Corporation
BCI	-	Bureau of Commerce and Industry
DAE	-	Division of Agricultural Economics
EPB	-	Economic Planning Board
GAMA	-	Garag-dong Agricultural Market Authority
ICB	-	International Competitive Bidding
KREI	-	Korea Rural Economics Institute
LCB	-	Local Competitive Bidding
MAF	-	Ministry of Agriculture and Fisheries
MCO	-	Market Construction Office
MOF	-	Ministry of Finance
NACF	-	National Agricultural Cooperative Federation
NFFC	-	National Federation of Fishery Cooperatives
NFFC	-	National Federation of Fishery Cooperatives
OCE	-	Office of Construction and Engineering
SCD	-	Second Construction Division
SMG	-	Seoul Metropolitan Government
TCD	-	Third Construction Division
VAT	-	Value added tax

## FISCAL YEAR

January 1 - December 31

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/1 The exchange rate of Won 685 to US\$1 used in the President's and Staff Appraisal Reports represents the rate as of November 1981 when the detailed cost estimates were finalized. The exchange rate as of February 15, 1982 was W710 = US\$1.

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## 1. BACKGROUND

### General

1.01 The Government of the Republic of Korea has requested the Bank to assist in financing a project aimed at improving the marketing of fruit, vegetables and fish. The project would provide for the construction of a modern wholesale market in Seoul, the establishment of an authority to operate it, training programs for officials and traders, improvement of market information services and a study of the entire marketing system in Korea. The project would be the first step in the Government's long-term plan to increase the efficiency of the agricultural marketing system to the benefit of both consumers and producers.

1.02 Discussions between the Government and the Bank on measures to improve agricultural marketing started in late 1976. For the next two years the Government efforts were directed to the preparation of a project involving a wide range of components, notably slaughter houses, cold storage facilities, refrigerated trucks, and an agricultural marketing centre in the vicinity of Seoul. Towards the end of 1978, the Government decided to focus on the most urgent problem of improving the marketing situation in Seoul by constructing a modern wholesale market for horticultural and marine products. The subsequent period starting early 1979 was devoted to the collection and analysis of basic data on the status of agricultural marketing in Seoul, followed by the preparation of detailed engineering designs which were completed in March 1981. Frequent changes of Government officials contributed to some delay in processing the project. The project was prepared by the Seoul Metropolitan Government (SMG) and the Korea Rural Economics Institute (KREI). This report is based on the findings of an appraisal mission consisting of Messrs. F.I.H. Moreithi and J. Macgregor (Bank), and Messrs. K.C. Parsons, A. Silva, S.C. Kang, C.Y. Lee, M.H. Chaudri and G.P. Hollands (consultants), which visited Korea in May 1981.

### The Agricultural Sector

1.03 The value of Korean agricultural production grew at an annual average of 4.2%, in real terms, during the last decade, compared to a growth rate of 9.9% for the economy as a whole. The more rapid growth of the other sectors has meant a steady decline in the relative contribution of agriculture to GNP from 30% in 1970 to 16.5% in 1980. Nonetheless, agriculture continues to play a vital role in the economy especially with regard to food supply, rural income and employment, and foreign exchange earnings.

1.04 Korean agriculture is founded on owner-operated smallholdings, numbering about 2.2 million, with an average holding of about 1 ha and 70% of all holdings between 0.3 and 1.5 ha. Only about 22% of the total land area of 9.9 million ha is cultivable. Rice is the major crop and takes up about 56% of the cultivated area. The remainder, mostly unirrigated upland fields, is used

for barley, soybeans, tobacco, and a wide range of fruit and vegetables. Nearly 86% of the rice fields are irrigated but due to cold winters, only one crop of rice is possible each year. About 30% of the rice lands are planted to barley in the winter.

1.05 The agricultural sector has been undergoing structural changes characterized by: (a) declining domestic per capita demand for staple food-grains; (b) shifting consumption and production patterns in favor of horticultural, fish and livestock products; (c) reopening of a gap between rural and urban incomes despite mounting deficits in the operations of agricultural price support schemes; (d) growing seasonal farm labor shortages; and (e) rapid growth in output of livestock products with high domestic production costs relative to international costs. These trends also underlie the basic issues bearing on Korean agricultural policies, priorities, and programs.

1.06 The Government's principal objectives in the agricultural sector traditionally have been to reach and maintain self-sufficiency in rice and improve the welfare of rural families. Self-sufficiency in rice was achieved in the mid-1970s. Because of unusually bad weather during the growing season, 1979 was a poor crop year and 1980 was disastrous, with the result that the country had to import 780,000 tons of rice during the 1979 marketing year and 2,360,000 tons in 1980. Projected rice imports for the 1981 marketing year are 500,000 tons. Korea depends heavily on imports for wheat and feedgrains. Since 1971 wheat imports have risen from 1.5 to 2.3 million tons and feedgrain imports rose sharply from 380,000 tons to 2.9 million tons.

1.07 Rising incomes have stimulated a marked and growing shift in consumer demand from the traditional staples to horticultural and livestock products. Thus, between 1970 and 1979 the per capita consumption of rice fell from 136 kg to 132 kg and barley from 37 kg to 14 kg while that of fruit and vegetables rose from 70 kg to 140 kg and meats from 5 kg to 11 kg. To increase the production of fruit and vegetables, the Government has promoted the growing of these crops in selected regions; measures to this end include provision of credit and improvement of marketing, research and extension services.

1.08 Primarily as a result of limited land and capital resources, average labor productivity in agriculture is substantially below that in other sectors; 32% of the labor force is in agriculture, but it produces only about 16.5% of GNP. In view of the virtual absence of new cultivable land and the limited scope for multiple cropping, efforts to increase agricultural labor productivity have focused on improving crop yields, mechanization and expanding the cultivation of crops such as fruit and vegetables. In addition, special programs have been instituted to promote expansion of nonfarm employment opportunities in the rural areas to facilitate the movement of excess labor out of agriculture, while maintaining an available supplementary labor supply that can be called out to help at peak seasons.

1.09 Compared to 1965-70, the trend of the agricultural terms of trade has improved steadily as a result of the agricultural price supports introduced in the late 1960s. Attractive price supports apply to most field crops and livestock products, and are aimed at improving the agricultural terms of trade and effecting transfer of income in favor of the rural areas. Under the major schemes, those for rice and barley, the Government procures farm produce at a price above and releases it at a price below the market price. Because of increasing farm price to wholesale price margins and increases in the total volume handled, the schemes have been operating at mounting deficits. During the past decade, the annual deficit for rice and barley increased 75-fold, amounting to US\$239 million in 1980 and bringing the cumulative total deficit to US\$1,507 million. The Government plans to eliminate the deficit by 1986 through gradual reductions. These plans were confirmed under the recently approved Structural Adjustment Loan.

1.10 Major issues in the sector relate to:

- (a) the attainment of an equitable balance between rural and urban incomes, without adverse effects on labor mobility into industry, the competitiveness of industrial exports and the costs of the agricultural price support schemes;
- (b) improvement of agricultural productivity while conserving fuel;
- (c) satisfaction of the rising demand for food without distorting resource allocation and straining the balance of payments; and
- (d) greater efficiency in the marketing system to ensure equitable distribution of the resultant benefits among producers, traders and consumers, while limiting public intervention to a supportive and complementary role to private enterprise.

1.11 Bank Group assistance to the agricultural sector, totalling US\$580.5 million, has been channelled through 15 projects. These include seven irrigation and rural development projects amounting to 70% of the loan funds, three credit projects amounting to 14% of the funds, two agricultural processing projects amounting to 11% of the funds, and two livestock development projects and a seed production project amounting to 5% of the funds. These projects formed part of the national development programs aimed at raising incomes and bettering the quality of life in rural areas. The proposed project would be the first to address the problems of agricultural marketing.

#### Project Formulation

1.12 The marketing of horticultural and marine products in Korea has been constrained by the small size of both production units and retail outlets; the absence of nationally accepted standards for produce packaging and grading;

poor marketing intelligence; and deficient market buildings, ancillary facilities, trading practices and institutions. The Government has increasingly come to recognize that the past development plans did not pay sufficient attention to marketing aspects. Although major gains have been achieved in the range and volumes of the commodities now being produced, marketing remains a principal weakness in the overall structure of the agriculture sector. Under the next Five-Year Plan (1982-86), a higher priority than in the past will be accorded to measures aimed at improving the efficiency of the agricultural marketing system. As part of the Plan, MAF has prepared an indicative program to overhaul the marketing system estimated to cost about US\$887 million (Annex 1). The program aims at improving assembling functions in the producing areas through strengthening the role of farmer organizations; promoting standardization, better grading and packaging practices; improving physical facilities for wholesale and retail markets in the major cities; and improving market information services. As the initial step in implementation of the program, the Government plans to relocate the Yongsan Market, Seoul's largest, to the outskirts of the city and, in the process, to carry out a number of institutional reforms hitherto impracticable because of deficiencies in the physical facilities now available at the Yongsan Market. These reforms would include: introduction of auction sales; establishment of bona fide wholesale companies and jobbers; creation of a market authority; and implementation of improved marketing information services. The proposed project would assist the Government to construct the Garag-dong Market to replace the Yongsan Market, and to implement the above reforms. It would also assist in carrying out public policy studies relating to the marketing system and studies to ascertain the feasibility of the various components envisaged in the indicative program.

1.13 The selection of the new market site takes into account the need to reduce traffic congestion; to realign the market to the major supply routes of farm produce into the city, and changes in population distribution south and north of the Han River; to ensure availability of convenient transport linkages with the city's main retail districts; and to minimize land acquisition and site development costs. Sizing of the market is based on the estimated capacity of existing and planned wholesale markets, and the need to ensure that the new market would be sufficiently large to have a significant impact on the whole marketing system. The commodity mix is designed to provide wider opportunities to small farmers, economies of purchasing to retailers, institutional and other large buyers, and to spread the market overheads and operating costs. The internal market layout, which was reviewed by representatives of future users, is planned to reduce intra-market congestion by ensuring a smooth flow of commodities and related vehicular and human traffic, and to provide sufficient ancillary facilities.



## Project Objectives

1.14 The project would have the following objectives:

- (a) promotion of a more competitive price formation mechanism through: provision of adequate auctioning facilities, reduction of intra-market congestion, creation of a market authority to foster fair and competitive trading practices, and improvement of the marketing information services;
- (b) increase of the efficiency of the agricultural marketing system throughout the country in general and Seoul in particular by: establishment of the new market in a sufficiently competitive atmosphere and with a throughput large enough to have a significant impact on price formation throughout the country; shortening of the marketing chain by establishment of consignment wholesale companies to act as receiving agencies for primary producers, and by enabling institutional buyers and retailer groups to purchase directly from the auction floor; reduction of the buyers' need to inspect the entire merchandise, by promoting adoption of standardized grading, packaging and weights which have already been formulated; reduction of intramarket spoilage by providing adequate storage facilities; and reduction of delivery and collection costs by locating the market in the outskirts of the city; and
- (c) establishment of a basis for improving public policies and institutions affecting agricultural marketing by a study of: trading practices, licensing policies, marketing legislation, tax legislation, produce assembling system, distribution channels and cost structure, and various marketing support services including transportation, credit and storage.

1.15 The project would complement Bank-supported projects to increase the production of fruit and vegetables (Cr. 335-KO, Lns. 1328-KO and 1974-KO). The studies proposed under the project would provide the Government and private investors with overdue policy guidelines and broad-based investment programs aimed at improving not only the marketing of horticultural and marine products but also of the major foodgrains and of livestock products.

## 2. MARKETING OF HORTICULTURAL AND MARINE PRODUCTS

### General

2.01 Horticultural and marine products account for about 27% of the total value of agricultural and fishery production. Between 1975 and 1979, the production of fruit increased by about 80% from 0.5 to 0.9 million tons,

vegetable production rose by about 74% from 4.6 to 8.0 million tons, and fish catches increased by about 14% from 2.1 to 2.4 million tons. Apples, peaches and pears are the most important types of fruit and account for about 70% of total production of fruit, with apples alone accounting for 52%. Chinese cabbage, radishes and onions comprise about 80% of the total production of vegetables, with chinese cabbage alone accounting for about 43%. The annual supply is subject to a marked seasonal fluctuation, with about 56% of the fruit, 66% of the vegetables, and 39% of the fish coming onto the market during September-December. Demand has been increasing rapidly in step with rising urban population and incomes. This trend is expected to continue though at a declining rate. By 1995, demand for fruit is projected to reach 2.0 million tons, for vegetables 10.9 million tons, and for fish 2.9 million tons.

2.02 It is estimated that private traders assemble about 60% of fruit and vegetables, with informal farmer groups and cooperatives handling 24% and 16%, respectively. Cooperatives have been taking a steadily increasing part in assembly of horticultural products, but have been handicapped compared to private traders by less flexibility in dealing with producers and lack of resources. On the other hand, about 82% of all fish and 90% of fresh fish assembling is done by cooperatives, which receive the fish from the fishermen on a consignment basis and auction it at the landing port. The buyers then ship the fish to the urban wholesale markets where it is auctioned again. The Government policy is to strengthen the role of cooperatives and of farmer organizations in horticultural marketing to promote group shipment to the wholesale markets, thus reducing assembling, handling and transportation costs, and offsetting the problems arising from the small size of the production units. Implementation of the policy is hampered by the absence of reliable receiving agents in the wholesale markets, notably in Seoul.

2.03 There are 31 cooperative, 58 licensed private, and 68 unlicensed private wholesale markets in Korea. It is estimated that the cooperative and the licensed private markets each handled 20% of the total volume of fruit, vegetables and fish marketed in 1980, and the unlicensed private markets handled the remaining 60%. In all the cooperative and in many of the licensed private wholesale markets outside Seoul, auctioning is the predominant method of sale, and middlemen consist of wholesale companies and jobbers. The whole-sale companies act as consignment agents, on a commission basis, receiving goods from the producer-shipper and placing them for auction. The jobbers buy on commission from the auction, mostly on behalf of retailers, but occasionally on their own account when this is needed to clear the market. However, in all the noncooperative markets in Seoul, both the trading practices and institutional framework are significantly different and the marketing system is less efficient.

2.04 Retail marketing is mostly in the hands of small-scale grocery shops, hawkers and peddlers. Such outlets account for about 85% of the fruit, vegetables and fish sold in Seoul. Cooperatives are also involved in

retailing but account for less than 1% of total sales. Supermarkets have been growing steadily in the main cities, but their share remains very small (less than 5% in Seoul). The Government policy is to encourage the development of supermarkets and chain stores to reduce marketing costs through vertical integration and bulk purchasing from the wholesale markets.

2.05 The prices of horticultural products have tended to rise faster than the prices of other agricultural commodities despite substantial increases in the volume of production, and wholesale and retail prices have risen more sharply than producer prices because of high marketing costs. These are largely due to an excessive number of intermediaries in the marketing system, entrenched rigidities in the distribution channels, and the failure of the system to adjust itself sufficiently to the major changes which have been taking place during the last two decades. Such changes include increases in the volume and varieties of the marketed commodities, continuing rises in fuel costs, and transformation of the farming system from subsistence to a market orientation. Marketing costs and margins, expressed as a proportion of the retail prices, range among vegetables from about 29% for red peppers to 80% for radishes; among fruits the range is from 36% for apples to 48% for pears; and for fish the average is 48%. The middlemen's margins are generally small; in the cases where they are relatively high (radishes and chinese cabbage), they reflect the increased risk of spoilage and wastage associated with the particular type of commodity. Marketing costs tend to be high for the leafy and bulky commodities because of their correspondingly high transportation and handling costs. One way of reducing the costs is to shorten the distribution channels, thus eliminating excessive handling.

2.06 The cooperatives have been providing marketing information services since 1975, based on data collected from the cooperative markets. The information system covers fish and all the major fruits and vegetables and is disseminated daily by radio, newspapers, teletypes and automatic telephone answering facilities located in the cooperatives' provincial centers in the main producing and consuming areas. The system suffers from three main deficiencies: limited relevance and meaningfulness because the grades, weights and measures used differ widely; unrepresentativeness of supply and demand conditions since the information is collected only from the cooperative wholesale markets which, except for fish, handle a very small proportion of the marketed commodities; and lack of comparability because of differing methods of data collection from market to market.

2.07 The available storage facilities are generally inadequate for fruit and vegetables both in the producing areas and in the existing wholesale markets; the Government is taking measures to lessen the problem. On the other hand, only about 30% to 40% of the available cold storage capacity for fish is currently being utilized. Transportation services are satisfactory as all the major fruit and vegetable producing areas and fish-landing ports are linked with the main highway system. Marketing

credit is available from the middlemen and from the cooperatives; however, the total loanable fund is insufficient to enable most of the producers to defer sales with a view to taking advantage of high off-season prices. Furthermore, credit from the middlemen generally restricts the producers' choice of marketing channels, often to the disadvantage of the producers.

2.08 The existing marketing law and ordinances are basically sound and adequate to ensure an orderly and efficient marketing system. However, they are modelled on Japanese legislation and are geared to a level of marketing development more advanced than the system prevailing in Korea at the moment. In effect, many of the stipulations of the law are difficult to enforce. This is particularly so with regard to the legally prescribed specifications for wholesale market premises and institutional framework. Partly because the premises used were constructed before the enactment of the law, they do not meet the legal requirements and cannot be licensed for wholesaling; consequently, most of the wholesale trade is in the hands of unlicensed wholesalers. Furthermore, unlike in Japan, the cooperatives in Korea play a small role in the marketing of fruit and vegetables, and most of the wholesale markets are privately owned and managed, so that enforcement of the law is difficult.

#### Seoul City Wholesale Marketing System

2.09 The metropolitan area of Seoul covers 627 sq km, with a resident population of about 8.5 million, or 21% of the total population of Korea. About 61% of the city's population resides in the area north of the Han River while 39% resides in the area south of the river. During the last decade, most of the population growth has been taking place south of the river, where the population increased by about 34% from 2.4 million in 1976 to 3.2 million in 1979, while population north of the river increased by only 12% in the same period. The Government policy is to support this trend. The city takes about 60% of the fruit consumed in the country, 26% of the vegetables and 26% of the fish. As a result of continued population growth and increase in incomes, the city's total and per capita consumptions of these commodities are projected to increase further, though at declining rates, with most of the increase taking place south of the river in keeping with the shift in the population distribution pattern. Table 2.1 shows the projected total consumption and trade of these commodities in Seoul (including transfer trade through Seoul to satellite cities):

Table 2.1: SEOUL CONSUMPTION AND TRADE PROJECTIONS

Year	<u>Fruit</u> Total (^000 tons)	<u>Vegetables</u> Total (^000 tons)	<u>Fish</u> Total (^000 tons)
1981	500	2,160	470
1986	680	2,675	640
1991	920	3,220	830
1995	1,160	3,670	1,000

2.10 About 94% of fruit and vegetables and 87% of fish enter the city from south of the Han River, while all the major wholesale markets are located in the downtown area north of the river, where traffic congestion is worse and room for expansion is severely limited (Map IBRD 15838R). This results in high costs of delivering the commodities to the wholesale markets and of distributing them to the various retail outlets in the city. The situation would deteriorate further as population growth shifts to the area south of the river.

2.11 There are 20 markets for fruit and vegetables and 8 for fish in Seoul, but only 10 are significant in terms of capacity (Table 2.2). The others are very small, handling less than 50 tons per day of horticultural products and less than 60 tons per day of fish and are unable to achieve economies of scale particularly in terms of spreading the overheads. The average ton/sq m ratio of 0.046 for fruit and vegetables for the 10 larger markets is very high compared to 0.025 for Osaka Market in Japan, reflecting serious intramarket congestion. Lack of expansion space has resulted in increasing pressure on essential facilities, including storage and auction space. Inadequate auction space has restricted adoption of more competitive and fairer trading practices and introduction of institutional reforms, particularly the establishment of bona fide consignment wholesale companies to act as receiving and auctioning agencies on behalf of the producer. The deficiencies of the wholesale markets in Seoul are epitomized by the Yongsan Market.

Table 2.2: RELATIVE IMPORTANCE OF THE MAJOR WHOLESALE MARKETS IN SEOUL

Wholesale market	Fruit and vegetables		Fish	
	Tons/year	%	Tons/year	%
1. Yongsan	1,494,000	61.6	98,000	23
2. Cheong Ryang-ri	524,000	21.6	50,000	12
3. Yeong Deung Po	177,000	7.3	-	-
4. Seo Dae Moon	79,000	3.3	-	-
5. Jung Bu	41,000	1.7	88,000	21
6. Nam Dae Moon	17,000	0.7	22,000	5
7. Su Yu	42,000	1.7	-	-
8. Seong Dong	21,000	0.9	-	-
9. Cheon Ho	30,000	1.2	-	-
10. No Ryang Jin	-	-	164,000	39
	<u>2,425,000</u>	<u>100.0</u>	<u>422,000</u>	<u>100.0</u>

### The Yongsan Market

2.12 The Yongsan Market is the largest wholesale market for fruit and vegetables in Korea, accounting for about 62% of the horticultural produce marketed in Seoul. The next largest is the Cheong Ryang-ri Market which accounts for about 22%. Like most of the wholesale markets in Seoul, the Yongsan Market is located north of the Han River. The market layout has developed haphazardly with little regard to efficient flow of the merchandise and related vehicular and human traffic. Due to lack of room for expansion, essential facilities such as auction floors, storage, loading, unloading and parking space, and waste disposal have not kept pace with the increased use of the market. The intramarket congestion has gotten steadily worse over the last decade and the throughput-space ratio is now about 0.070 ton/sq m, compared to an average of 0.046 ton/sq m for fruit and vegetable wholesale markets in the city. The lack of space at Yongsan has resulted in high spoilage and wastage, especially vegetables for which spoilage and wastage are estimated to be about 8% of the throughput. Queuing time for delivery and collection vehicles is also excessive. Spoilage and vehicle waiting time are factors in the high marketing costs. The congestion and lack of auctioning facilities have also rendered the marketing system less competitive by restricting buyers' movement in search of better bargains.

2.13 Private individuals own the market buildings and facilities and, as landlords, their rents are virtually assured and are independent of changes in other marketing costs; the greater the intramarket congestion, the greater the total rental revenues they stand to collect. Furthermore, even though the present market locations, sizes and trading practices are

uneconomical from the national point of view, an individual landlord would not move to a new site unless he is assured of the existence of a cluster of marketing facilities, because retailers prefer to buy where many wholesalers are actually or supposedly competing in close proximity. Most of the wholesale dealers will move from the old sites only if assured that their competitors will accompany them.

2.14 Unlike the cooperative and most of the provincial wholesale markets, the Seoul markets do not have wholesale companies to act as regular receiving agents for the producers, who are therefore compelled to rely on intermediaries to reach the market. Longer distribution channels and consequently higher marketing costs ensue. In addition, over 70% of the wholesaling business is in the hands of dealers who have registered themselves as retailers partly to avoid paying various taxes, but also because the premises in which they carry on their business do not meet the legal requirements for wholesale licenses. These dealers frequently engage in speculative trading, receiving goods on a consignment basis or buying on their own account depending on the resale prospects.

2.15 Because of lack of standardized packaging and grading, and high rates of spoilage particularly for vegetables, buyers have little trust in commodity specifications and have to inspect visually the entire merchandise. This results in increased pressure on market space, excessive handling, and long transaction times. In the absence of open auctions, even the licensed dealers often change position, acting as commission agents when the prospects of resale prices are unfavorable and buying on their own account when prospects are good. They thus pass all price risks to producers and deny them the benefits of higher resale prices. Inadequate auctioning facilities also militate against open setting of wholesale prices, with the result that prices paid to the farmers and rural assemblers by wholesale dealers are often lower than the realized prices.

### 3. THE PROJECT

#### Project Description

3.01 The principal features of the project are:

- (a) the construction of the Garag-dong agricultural wholesale market in Seoul consisting of:
  - (i) a fruit and vegetable market;
  - (ii) a fish market;
  - (iii) a related item market and retail stores;

- (iv) cold storage facilities;
  - (v) an administration building, including agriculture marketing information center; and
  - (vi) utility facilities including: water, garbage, sewerage, and solid waste treatment plants.
- (b) the construction of about 3.5 km of market-related roads, including an underpass, intramarket streets and parking facilities;
  - (c) establishment of the Garag-dong Agricultural Market Authority;
  - (d) a study of Korea's agricultural marketing system, including feasibility studies of various components of the agricultural marketing improvement program as part of the Government's Five-Year Plan (1982-86) and a review of policy and institutional issues; and
  - (e) provision of local and overseas training in agricultural wholesale marketing.

#### Location and Site Conditions

3.02 The Garag-dong Market would be located on a 55 ha site on the outskirts of Seoul, some 15 km from the city center, south of the Han River (Map IBRD 15843R). The site, previously used for paddy cultivation, lies about 2.0 m below the adjacent main roads and therefore about 1 million cu m of compacted fill would be placed to bring it to road level. Sand and gravel underlies the site and the depth to rock averages about 10 m. SMG plans to develop the area surrounding the market for residential, commercial and industrial uses. The area north and east of the site is reserved for about 300,000 apartment units, while the area south of the site is reserved for market-related uses including truck terminals, warehouses, and wholesale markets for processed food and manufactured goods. The site lends itself to convenient linkages with the existing roads, mass transit, and public utilities.

#### Principal Features of the Market

3.03 The market would consist of four main buildings and ten smaller ones, with a total floor space of nearly 200,000 sq m. The daily throughput would be 2,390 tons of vegetables, 640 tons of fruit and 540 tons of fish; this would be about 23% of vegetables, 19% of fruit, and 19% of fish projected to be traded and consumed daily in Seoul in 1995. Despite its larger size compared to the Yongsan Market, the new market would handle about 440,000 tons of vegetables less per year than Yongsan Market. The difference would consist wholly of radishes and chinese cabbage during the



October-November Kimche season. The surplus would be disposed through the series of temporary markets organized by SMG for the purpose. On the other hand, the new market is designed to accommodate all the fish now being traded at the Yongsan as well as about 50% of the projected increase in Seoul's fish trade up to 1986. The buildings would be founded on precast concrete piles driven to solid rock. The frames for the fruit and vegetable market and the fish market would be of prestressed concrete beams and reinforced concrete columns. The other buildings would be mainly of reinforced concrete. The walls would be mainly of precast concrete panels and concrete blocks, while floors would be of reinforced concrete and precast concrete slabs. Each building would include appropriate plumbing, heating and air conditioning facilities.

3.04 Fruit and Vegetable Market Buildings. The main market building would have four floors with a total floor space of 107,000 sq m. The building would provide an auction hall (30,350 sq m) for a daily throughput of 640 tons of fruit and about 1,080 tons of vegetables suitable for grading. The rest of the vegetables, about 1,310 tons per day consisting of mostly radishes and chinese cabbage, would be traded in the truck sale building (3,800 sq m) primarily through negotiated sales. The fruit and vegetable building would also provide stalls for jobbers (20,300 sq m); offices for the wholesale companies (11,820 sq m); unloading and loading space (6,300 sq m); general storage (6,130 sq m). There would be about 530 jobber stalls of which 225 would be of 45 sq m and 305 would be 33 sq m so as to accommodate all existing wholesale dealers from the Yongsan Market. A proportion of the approximately 2,400 retailers, peddlers, and hawkers currently doing business with the Yongsan Market would follow the move to Garag-dong, while the remainder would have to transfer their activities elsewhere. Given the dynamic nature of the city's economy, most of the affected traders would find alternative opportunities around the Yongsan site, other wholesale and retail centers and in non-market related activities.

3.05 Fish Market Building. This would be a four-floor building, including a basement, with a floor space of 40,000 sq m. The daily throughput would be 540 tons. All the fish would be sold through auction and adequate space (10,800 sq m) would be provided for that purpose. It is estimated that about 260 tons would be bought and transported directly from the auction floor while the balance would be resold through the jobber stalls. About 16,000 sq m would be made available for some 160 jobber stalls, and 8,600 sq m for wholesale company offices required to accommodate the fish dealers from the Yongsan Market. The building would also provide cold storage facilities (810 sq m) with a capacity of 560 tons per day, and an ice making plant with a production capacity of 20 tons per day and a storage capacity of 100 tons.

3.06 Related Item and Retail Market Buildings. The related item market building would have two floors, including a basement, while the retail market would have one floor. The related item market would supply primarily packaging materials for the wholesaling activities; it would also stock merchandise (canned food, seeds, spices and utensils) that are commonly retailed jointly with fruit, vegetables and fish. The fruit and vegetable related item market building would have a floor space of 8,600 sq m, and the fish market related item building 2,600 sq m. About 300 dealers would be accommodated in these markets. The retail stores would handle the produce that may remain unsold, especially from the truck sale market, at the end of the market day. It is estimated that such remainders would range from 5% to 10% of the daily wholesale throughput. The stores would accommodate 217 dealers, and would be fenced off to prevent the overflow of retailing activities into the parking and wholesaling areas.

3.07 Freezer Storage. This would be a 4,870 sq m, three floor building. It would be principally used for fish but also for meat, and would therefore be situated between the fish and the meat market buildings.<sup>/1</sup> It would have a cold storage capacity of 1,830 tons and quick freezing facilities for 25 tons per day. In designing the freezer capacity, account has been taken of the currently available freezing storage facilities in the vicinity of the Garag-dong Market and in the fish landing ports.

3.08 Administration and Service Buildings. The administration building would have six floors, including basement, amounting to 11,500 sq m. It would provide office facilities (2,700 sq m) for the Garag-dong Agricultural Market Authority (GAMA), and space for the Agricultural Marketing Information Center (440 sq m). The exhibition hall (320 sq m) would also be used as a conference room and as a classroom for the proposed training program, with a capacity of about 35 participants per session. In addition, the building would accommodate various ancillary activities, including a bank, a cafeteria, a telephone exchange, a workshop, a post office, a laboratory, and a clinic. The service building would provide amenities, public lounges, a restaurant, baths and showers for market users.

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<sup>/1</sup> The meat market would be constructed and financed separately from the proposed project. The meat market is excluded from the project's costs and benefits. The Garag-dong site would also include about 200,000 sq.m. provisionally reserved for a grain market to be built in the late 1980s.

3.09 Utility Buildings. The market would be fully serviced with solid and liquid waste disposal, gas, electricity, telecommunication, and garbage disposal facilities. Industrial water, estimated at 1,800 cu m per day, would be drawn from three tubewells, while potable water, estimated at 2,400 cu m per day, would be supplied from an existing 500 mm main to be extended to the site. Septic tanks would be constructed for all main buildings, and drained to a sewer treatment plant from which the effluent would be carried to a retention basin located adjacent to the Tancheon River. Solid wastes of all types would be brought to a garbage treatment plant for partial sorting (mostly removal of metals), and then compacted into bales and hauled by trucks to the municipal refuse disposal sites. A storm drainage system designed for a 50-year storm would be installed throughout the market area. A gasoline station would be provided for the market-related vehicles.

3.10 Road Works. The project includes the following road works (Map IBRD 15846 RI): extension of the Outer Ring Road (1,000 m long and 50 m wide) along the northern market boundary; construction of the western boundary street (690 m long and 15 m wide), the southern boundary road (900 m long and 35 m wide), the intramarket main street (600 m long and 30 m wide), and an underpass across the Outer Ring Road (300 m long and 16 m wide). The eastern boundary road, Songpa Highway, has already been widened into four lanes over a distance of 6 km south of the market site. Parking space and intramarket circulation streets (270,000 sq m) would be provided for about 10,000 vehicles, mostly for shippers' trucks and distribution pickups and also for employees and visitors. Although the existing roads and those to be constructed under the project are adequate for the running of the market, the operation of the market would be improved by extending and widening into four lanes the Southern Ring Road from Daechi-dong to the new market site, including a bridge across the Tancheon River. An assurance was obtained that SMG would construct the South Ring Road from Daechi-dong to the new market site, including a bridge across the Tancheon River, and complete the work by December 31, 1984.

#### Other Market Related Project Components

3.11 The project would establish an Agricultural Marketing Information Center to be located in the Administration Building. The Center would be equipped with computer based terminal facilities, monitors, and display boards, as well as automatic telephone answering facilities. It would be linked with the NACF and NFFC marketing information system throughout the country. The project would also assist in establishing the Garag-dong Agricultural Market Authority (GAMA) which would be responsible for the overall management of the market facilities, while leaving commercial activities to private enterprise. Under the auspices of MAF, the Authority would also organize short courses, including overseas study tours, for wholesalers,

jobbers and auctioneers expected to move from the Yongsan to the Garag-dong Market; for GAMA staff; for wholesalers, auctioneers, jobbers, and operators of the other wholesale markets in Seoul and other major cities; and for staff of SMG, MAF, and provincial governments concerned with agricultural marketing. For the market participants the training program would focus on ways and means of improving trading practices to reduce marketing costs and ensure a competitive and orderly marketing system. For the governmental officials it would aim at familiarizing them with technical, policy and institutional problems affecting agricultural marketing in the country.

#### Agricultural Marketing Studies

3.12 The studies would cover the marketing of the principal foodgrains, and of horticultural, marine and livestock products in Korea. They would include feasibility studies of the agricultural market improvement project proposed for inclusion in the 1982-86 Development Plan and preparation of a perspective (10-15 years) agricultural marketing improvement master plan, which would provide guidelines for both governmental and private initiatives. The feasibility studies would assess the technical, financial and economic viability of the proposed projects, formulate designs, define any needed policy and institutional changes, and identify appropriate implementing agencies. The master plan studies would undertake an overall review and analysis of the past, current, and future situations and the underlying major factors, and formulate a long-term investment program and required policy, legal and institutional changes for the next 10-15 years. The studies would take about 24 months to complete. MAF would be responsible for making the necessary arrangements for timely execution of the studies. An assurance was obtained that MAF would submit by September 1, 1982 detailed descriptions of the studies and proposals for their implementation for review and approval by the Bank. The project would provide for about 200 man-months of consultant services to assist in execution of the studies, of which about 60 man-months would be of expatriate origin and 140 man-months of local origin. The foreign consulting services are expected to cost about US\$10,000 per man-month and the local services about US\$3,000 per man-month. An assurance was obtained that consultants engaged under the project would be employed under terms of reference and under conditions acceptable to the Bank.

#### Status of Designs

3.13 The planning of the market was carried out by the Korean Rural Economics Institute and the consultants, Hanyang Engineering Company of Seoul, a firm with considerable experience in the design and construction of large buildings in Korea and overseas. The planners drew on experience gained from studying the Osaka wholesale market. Detailed design of the various buildings was completed in March 1981 by Hanyang Engineering Co., who used the services of DRC Consultants Inc., New York, to design the 20 m long prestressed girders

used in the main market building. A structural engineer, employed as a Bank consultant, reviewed the consultant's design criteria, techniques of structural analysis, and design codes and found them in accordance with sound engineering practice.

#### Implementation Schedule

3.14 Construction of the market buildings and the market-related roads, and parking areas would be carried out under a single contract. The contract would include installation of plumbing, heating, air-conditioning facilities and market-related equipment and utilities. Invitations to prequalify were issued in November 1981, prequalification has been completed and bid invitations were issued in January 1982. A contract should be awarded by May 1982. The contract will call for a 24-month construction period so the market should open in June 1984. A considerable amount of preparatory work has been completed, including site clearing and filling, drainage and access roads. Land acquisition and compensation has been completed. The cost of works completed to date is about US\$13.0 million, and about US\$7.0 million has been expended on land acquisition and compensation. The marketing studies would begin in mid-1982 and be completed in mid-1984.

#### Cost Estimates

3.15 The total project cost is estimated at US\$102 million of which US\$50 million or 49% is foreign exchange. This relatively high foreign exchange content reflects the cost of imported fuel consumed in the manufacture of cement and steel, and the need to import most of the timber used for form work. The consultants have prepared a detailed bill of quantities for all of the civil, mechanical, and electrical works associated with the project. The cost estimates were derived by applying to these quantities the unit prices quoted for similar works in Seoul in March 1981. This estimate was increased by 9% to bring it to early 1982 prices as a base cost estimate. Because of the detail in which designs and quantity estimates have been prepared, a physical contingency of 5% is considered appropriate. The costs include about 10% for taxes and duties. Costs due to expected price increases over the construction period amount to 15% of the total base cost plus physical contingencies assuming the following annual rates of price escalation:

ANNUAL INFLATION RATE (%)

	1982	1983	1984
Local content	14	11	10
Foreign exchange content	8.5	7.5	7.0

Details of the project costs are presented in Annex 2 and summarized below:

	Local	For- eign	Total	Local	For- eign	Total	Foreign exchange
	(Won	billion)		(US\$ million)/a			(%)
<u>Construction and installation</u>							
Roads and utilities	4.0	2.6	6.6	5.80	3.80	9.60	40
Buildings	12.1	8.1	20.2	17.70	11.80	29.50	40
Mechanical works	2.5	1.6	4.1	3.60	2.40	6.00	40
Electrical works	3.0	2.0	5.0	4.40	2.90	7.30	40
Subtotal	<u>21.6</u>	<u>14.3</u>	<u>35.9</u>	<u>31.50</u>	<u>20.90</u>	<u>52.40</u>	40
<u>Furnished equipment &amp; matis.</u>							
Roads and utilities	0.8	3.3	4.1	1.20	4.80	6.00	80
Buildings	1.4	5.3	6.7	2.00	7.80	9.80	80
Mechanical works	0.8	3.3	4.1	1.20	4.80	6.00	80
Electrical works	0.6	2.4	3.0	0.90	3.50	4.40	80
Subtotal	<u>3.6</u>	<u>14.3</u>	<u>17.9</u>	<u>5.30</u>	<u>20.90</u>	<u>26.20</u>	80
Engineering and supervision	2.1	0	2.1	3.00	0	3.00	0
GAMA establishment	1.0	0	1.0	1.50	0	1.50	0
Studies and consultants/b	0.4	0.3	0.7	0.50	0.50	1.00	50
<u>Base Cost</u>	<u>28.6</u>	<u>29.0</u>	<u>57.6</u>	<u>41.80</u>	<u>42.30</u>	<u>84.10</u>	50
Physical contingencies	1.4	1.2	2.7	2.04	1.90	3.94	50
Expected price increases	5.6	3.5	9.1	8.26	5.05	13.21	38
<u>Total Project Cost</u>	<u>35.6</u>	<u>33.8</u>	<u>69.4</u>	<u>52.00</u>	<u>49.25</u>	<u>101.25</u>	49
Front end fee on Bank loan	-	0.5	0.5	-	0.75	0.75	
<u>Total Financing Required</u>	<u>35.6</u>	<u>34.3</u>	<u>69.9</u>	<u>52.00</u>	<u>50.00</u>	<u>102.00</u>	

/a US\$1.00 = W 685

/b Including overseas training

### Financing

3.16 The proposed Bank loan of US\$50.0 million would finance the project's foreign exchange component. The balance of Won 35.4 billion (US\$52.0 million) would be provided in part from the Government budget (Won 27.2 billion) and in part from SMG's own resources (Won 8.2 billion). The Government would be the borrower and would onlend to SMG US\$49.4 million under a Subsidiary Loan Agreement on the same terms as the Bank loan to the Government. SMG would bear the foreign exchange risk. The balance of the Bank loan of US\$0.6 million would be made available to MAF for financing the costs of the marketing studies and overseas training. To ensure a timely and continuous flow of funds, assurances were obtained that SMG would set up a special account to service the project which would be replenished by the Government at quarterly intervals to a level equivalent to the estimated requirement for the next three months, and that the initial credit to the account would be made by June 30, 1982. Establishment of the account and execution of the Subsidiary Loan Agreement between the Government and SMG would be conditions of effectiveness of the loan.

### Procurement

3.17 A single contract for the construction of the market complex and installation of equipment and the construction of market-related roads and underpass would be awarded to prequalified bidders following international competitive bidding in accordance with Bank Group Guidelines. The value of this contract, excluding physical contingencies and expected price increases, would be about US\$52 million, or 62% of the project base cost. It is SMG's policy to supply contractors with most of the material and equipment to be incorporated in the works. Such materials and equipment would be mostly procured on behalf of SMG by the Office of Supply, Republic of Korea (OSROK). This policy has been applied successfully on other Bank-assisted projects in Korea. The total value of furnished materials, excluding contingencies, would be about US\$26 million. Furnished materials consisting of reinforcing steel, cement, and various items of specialized equipment with a value of about US\$12 million would be procured following ICB according to Bank Group Guidelines. Other furnished materials for which ICB would be clearly impractical, namely ready-mixed concrete (US\$5.6 million) and asphalt concrete (US\$2.5 million) as well as building materials and supplies which would not exceed about US\$500,000 in a single contract and therefore would be of no interest to foreign bidders, would be procured through local competitive bidding (LCB) in accordance with SMG procurement procedures which have been reviewed and are acceptable to the Bank. In evaluating bids for materials and equipment obtained through ICB, a preference limited to 15% of the cif price of imported goods or the custom duty, whichever is lower, would be extended to local manufacturers.

### Disbursement

3.18 Disbursements for civil works would be at 45% of total expenditures, to be disbursed against monthly contractors' progress payments. For materials and equipment procured through ICB, disbursements would be at 100% of foreign expenditures for directly imported goods, at 100% of ex-factory costs for locally manufactured goods, and at 65% of the costs of imported goods procured

locally. For furnished materials and equipment procured through LCB, disbursement would be at 85% of total expenditure since total costs would include some element of local taxes, and would be limited to the supply of ready-mixed concrete and asphalt concrete and there would be no disbursement against the many small LCB contracts for materials. Prior review by the Bank would be required for all contracts eligible for Bank disbursement. Disbursements for studies and consulting services would be on the basis of Statement of Expenditures at 50% of total expenditures or 100% of foreign exchange costs. Disbursement of the Bank loan would be completed by December 31, 1984. The disbursement estimate differs from the Bank-wide profile mainly because of the short period within which the market construction would be completed and the fact that site development and installation of drainage works have been ongoing since April 1981. Estimated schedules of expenditures and disbursements, and the allocation of the proceeds of the loan are shown in Annex 2.

#### Accounts and Audits

3.19 Assurances were obtained that SMG and MAF would maintain separate accounts for the project and that after audit by independent auditors acceptable to the Bank, the project accounts, together with the auditors' comments would be submitted to the Bank within six months of the close of each financial year.

#### Environmental Effects

3.20 The project would not have any significant adverse environmental impacts. The proposed market is compatible with the planned land use in the vicinity of the site. To protect the residential area north of the site from market-generated noises, a landscaping buffer would be established along the northern boundary of the market site, while the main entry gate for heavy supply vehicles would be located on the southern side. The original design for garbage disposal envisaged an incinerating plant on the site; to avoid generating pollutant fumes, the design was changed in favor of a system of compaction and haulage to the municipal sanitary land fill. Effluent from the market would be treated to a satisfactory quality level.

### 4. ORGANIZATION AND MANAGEMENT

#### Implementing Agencies

4.01 While the Ministry of Agriculture and Fisheries (MAF) is the agency responsible for overall policies relating to agricultural marketing and is also primarily responsible for planning and coordinating the establishment of wholesale markets, it delegates implementation and operational responsibilities to the local governments, cooperatives and selected public corporations. Thus, local and municipal governments are responsible for the establishment, management and supervision of wholesale markets in their jurisdictional areas. The Division of Agricultural Economics (DAE) of MAF would play a major supporting role in the construction and subsequent operations of the proposed



market, in the planning and supervision of the studies and in organization of the training program. The Division is headed by a Director answerable to the Director-General, Bureau of Agricultural Economics, who is in turn responsible to the Assistant Minister for Agricultural Economics and Development. One of DAE's main functions is to promote improvement of agricultural marketing of the non-grain commodities. To this end, it is responsible for securing and administering financial and technical support from the Central Government to the municipal authorities. The MAF would accordingly be responsible for ensuring that the basic laws and policies would continue to be consistent with the objectives of the project, and that sufficient local funds for the project are budgeted and made available in a timely manner. The Seoul Metropolitan Government (SMG) would be responsible, through its Office of Construction and Engineering (OCE), for the construction of the proposed Garag-dong Market and related utilities and infrastructure. It would also own the market through a subsidiary corporation, the proposed Garag-dong Agricultural Market Authority. SMG is a corporate entity coming under the Office of the Prime Minister which approves its budget and borrowings. The SMG is organized into functional bureaus and is headed by a mayor who is appointed by the President of Korea and holds cabinet rank. Although its terms of employment are generally less favorable than the private sector's, SMG has succeeded in attracting and retaining well qualified and experienced staff both in the technical and administrative fields. It has a total staff of about 34,000 of whom more than 800 are technical personnel.

4.02 The SMG accounting system consists of a General Account for routine services financed mainly from fiscal revenues, and a number of Special Accounts for specific projects and activities which generate their own revenues. SMG's consolidated statements of receipts and expenditures for the period 1975 to 1980 show consistent annual surpluses rising from US\$20.5 million to US\$115.6 million. The receipt-expenditure ratio remained stable up to 1978, but declined thereafter in response to inflationary effects on running costs of the social services and a relatively less elastic tax base. Municipal taxes, rents and fees account for about 80% of General Account receipts, with the balance made up of savings and annual subventions from the Government under revenue sharing arrangements. Community services are the largest user of funds but that share declined to 33% of total expenditures in 1980 as a result of retrenchments instituted in 1979. While operating expenses of the various Special Account projects have tended to rise faster than revenues, a large surplus of US\$83.1 million was realized in 1980, compared to US\$37.7 million in 1978. Borrowings also rose over the same period to US\$96.6 million in 1980, but the operating-revenue/debt-service ratio improved from 17.5 to 22.5. The total long-term debt outstanding at the end of 1980 amounted to US\$320.1 million, of which 97% was under Special Accounts. About 78% of the total debt was from local borrowings; foreign loans amounted to US\$74.0 million, of which about 60% came from Japan for construction of the Seoul subway. The annual debt service is estimated at US\$27.7 million in 1981, rising to about US\$29.5 million from 1983 onwards. This would represent about 2.6% of the consolidated SMG receipts for 1980.

Project Management: Construction

4.03 In January 1980, SMG created the Market Construction Office (MCO) as a separate unit under the Bureau of Commerce and Industry (BCI) to supervise the construction of the Garag-dong Market. BCI has been responsible for supervising the construction of the first phase of the Seoul Subway, the City Stadium Complex, and several housing projects. In each case, a task force was created and staffed with personnel drawn from the various bureaus; MCO was constituted in a similar manner. Since its creation, MCO has overseen the preparation of preliminary and detailed designs for the market, liaised with the various SMG bureaus and with MAF, and supervised site development works. Under the proposed project, its main functions were expected to include supervision of market construction, procurement of building materials and major equipment to be installed by the contractor, monitoring and reporting construction progress and authorizing payments to the contractor. As a result of a reorganization in November 1981, all SMG construction activities, except the subway, have been placed under a newly established Office of Construction and Engineering (OCE), and MCO has been abolished. OCE is headed by a Director General, assisted by a Deputy, and is organized into one administrative and five construction divisions, each headed by a Director. The General Affairs Division is primarily responsible for the provision of logistic support, budgeting and accounting services, and procurement of construction materials and equipment. The Second Construction Division (SCD) would have overall responsibility for engineering supervision of the market construction, with particular emphasis on the civil engineering aspects. The Third Construction Division (TCD) would provide assistance with electrical and mechanical engineering aspects. The Deputy Director General of OCE would have direct responsibility for all market construction activities. Existing MCO staff have all been absorbed into the larger SCD and additional staff has been drafted in from the TCD. The reorganization has resulted in assignment of a larger and more experienced staff to construction of the market and has provided a more flexible mechanism for movement of personnel from other divisions as needed. If necessary, provision would be made for up to six months of consultant services spread over the construction period to assist OCE in designing detailed construction monitoring procedures and inspection checklists, reviewing the contractor's CPM network, and to periodically review with OCE supervision standards and inspection and test procedures. An assurance was obtained that if necessary OCE would employ such a consultant under terms and conditions acceptable to the Bank. OCE would operate under standard SMG rules, by which any changes in works resulting in increased costs need the approval of the Vice-Mayor if less than W 30 million and of the Mayor if more.

Project Management: Operations

4.04 When completed, the Garag-dong Market would be the largest and most modern wholesale agricultural market in Korea. SMG would create a body to be known as the Garag-dong Agricultural Market Authority (GAMA), as a statutory corporation under the Local Government Public Corporation Law. GAMA would be

responsible for drawing up and enforcing market rules and regulations, for collection of rents and other market charges, for operation and maintenance of physical facilities, for organization and operation of the Marketing Information Center, and for conducting courses in improved marketing practices for wholesalers, jobbers and auctioneers doing business in the Garag-dong and other wholesale markets in Korea. In addition, GAMA would set up an information system to bring together shippers in Seoul looking for transport opportunities for goods to the provinces and produce truckers looking for backhauls. SMG is committed to the closing of the existing Yongsan Market as soon as the new market is built to ensure prompt utilization of its facilities and to expedite the transfer of the building materials market from downtown Seoul to the vacated Yongsan site. An assurance was obtained that SMG would, by April 1, 1983, present to the Bank for review and comment a detailed plan of action for the closing of the existing wholesale market for fruit, vegetables, and fish at Yongsan and the transfer of its activities and trading community to the new Garag-dong Market.

4.05 SMG would establish a Steering Committee to undertake the preparatory work leading to the establishment of GAMA. Assurances were obtained that SMG would set up the Steering Committee by October 30, 1982. The Committee would be responsible for drafting GAMA's articles of incorporation and rules and regulations for operation of the market, together with preparing proposals for an appropriate structure and levels of market rents and fees. Assurances were obtained that SMG would forward to the Bank for review and comment by June 30, 1983:

- (a) GAMA's draft memorandum and articles of incorporation;
- (b) draft rules and regulations for the operation of the Market; and
- (c) draft proposals on structure and levels of market rents, fees and other charges.

4.06 A Board of Directors, appointed by SMG and consisting of the President, the Vice-President, the Internal Auditor, the Directors of the Business, Administration and Technical Divisions, and a wholesalers' representative, would determine GAMA's general operating policies and procedures. The Board would be subject to guidance by an Advisory Committee, including but not limited to representatives of MAF, SMG, the Ministry of Finance (MOF), the National Agricultural Cooperative Federation (NACF), the Agriculture and Fishery Development Corporation (AFDC) and the Korea Rural Economics Institute (KREI). Input from the Advisory Committee would be particularly pertinent on matters with ramifications beyond the physical limits of the market. An assurance was obtained that by July 1, 1983 the Borrower would appoint the Advisory Committee. GAMA would be organized into three divisions, each headed by a Director (Figure 4.1). The Business Division would be responsible for supervising wholesaler trading activities, enforcing rules and regulations,

conducting training courses, managing the Marketing Information Centers, and promoting innovations to improve marketing efficiency. The Administration Division would be responsible for logistic support, budgeting and accounting, and collecting rents and other market charges. The Technical Division would be responsible for the maintenance of the market buildings, facilities, utilities, machinery and equipment. It is estimated that GAMA would have a staff of about 130. GAMA's role would be basically a facilitating and supportive one, leaving trading and commercial activities wholly in the hands of wholesale companies and jobbers; at least four wholesale companies for fruits and vegetables, and two for fish would be established at the Garag-dong Market. The traders at the Yongsan have shown keen interest in forming such companies. The wholesale companies would be responsible for auctioning, on a commission basis, all the fish, fruit, and vegetables that are amenable to grading, while the rest of the vegetables would be traded in the truck sale area mainly through negotiated sales. The jobbers would perform the function of bulk breaking in that they would resell part of the goods through their stalls in lots smaller than in the auction sales; by so doing, the jobbers would continue to serve the needs of the various small-scale buyers, including peddlers and hawkers, now buying their merchandise from the Yongsan Market. Assurances were obtained that SMG would, not later than September 30, 1983, establish GAMA under memorandum and articles of association acceptable to the Bank, and appoint GAMA's President, and Directors of Business, Administration, and Technical divisions.

4.07 The establishment of the Agricultural Marketing Information Center and introduction of a training program would constitute significant steps towards improving agricultural marketing on a national scale. By collecting and disseminating prices by standard grades and packages for the Garag-dong Market, the Center would ameliorate some of the major deficiencies in the prevailing agricultural marketing information services; it would add to the information collected from the cooperative markets and thus would make the data base more representative of supply and demand conditions. The training courses would be initially for GAMA's own staff and wholesalers, jobbers, and auctioneers expected to move to the Garag-dong Market; subsequently, courses would be run for wholesalers, jobbers and auctioneers from the other wholesale markets in the country, and staff of MAF, SMG and provincial governments concerned with agricultural marketing. The trainers would be drawn from KREI, MAF, universities, vocational schools, NACF, AFDC, the Office of Agricultural Product Inspection, and selected individuals from the existing wholesale companies. The first phase would start in August-September 1983, at the NACF Training Center in Seoul, and would include overseas study tours for the key staff of GAMA (President, Vice-President and Directors of Technical, Business, and Administration Divisions). After the opening of the Garag-dong Market, the courses would be conducted in the facilities provided for the purpose in the Administration Building. Participants would pay for their board and lodging.

4.08 A basic corporate objective of GAMA would be to generate from rents and other market charges sufficient revenues to cover operating costs, depreciation on the market buildings, facilities, machinery and equipment, and servicing part of the Bank loan relating to the market and other borrowings. The depreciation allowances would be amortized through a sinking fund. To this end, GAMA would, from time to time, review the structure and levels of the rents, and other market charges and make the necessary adjustments to ensure conformity with its financial objectives. As GAMA would start operating in a skeleton form at least nine months before opening of the Garag-dong Market, it would incur a deficit of about W 0.18 billion during the period consisting mostly of the costs of staff and of overseas study tours. During the first year of operation, it would require a sum of about W 1.0 billion (US\$1.5 million) to finance capital expenditures for office furniture, equipment and service vehicles. These start-up expenditures would be included in the project costs. Assurances were obtained that SMG would cause GAMA to generate sufficient revenues from market rents, fees and other charges to cover the Authority's operating costs, adequate depreciation of buildings and equipment, and servicing the part of the Bank loan relating to the market and any other borrowings; that the situation would be reviewed periodically to ensure continued achievement of these objectives; and that GAMA would maintain separate financial records and accounts which would be annually audited by independent auditors and submitted to the Bank.

4.09 While GAMA would be concerned specifically with the new market, its responsibilities might be widened eventually to cover future newly constructed and/or rehabilitated agricultural wholesale markets in Seoul or individual authorities might be established for each market. An assurance was obtained that MAF would, on request, provide the Bank with information concerning proposals for management of agricultural wholesale markets.

## 5. BENEFITS, JUSTIFICATION AND RISKS

### Financial Analysis and Cost Recovery

5.01 Cash flow projections over a 25-year period have been worked out for the wholesale companies, jobbers, and GAMA (Annex 3). For some of the jobbers, notably the fish jobbers, incremental net cash flow would be negative during the first year of operation when the volume of business is expected to be relatively low. However, the financial rate of return would be attractive and would range from about 48% for the fish jobbers to over 50% for the other jobbers. Most of the revenues for the wholesale companies and jobbers would come from commissions, ranging from 5.5% to 6.6% of gross sale proceeds. However, the jobbers would derive an appreciable part of their revenues from dividends on equity holding in the wholesale companies. The law requires wholesale companies to trade through licensed jobbers and it would therefore be in the interest of the wholesale companies to sell shares to the jobbers to the extent that may be necessary to attract them to the new

market. As an additional incentive to attract the jobbers to the new market, SMG proposes to charge about W 7,500 per pyong (US\$3.32/sq m) for stalls compared to the going rate of about W 15,000 per pyong (US\$6.64/sq m) at the Yongsan Market.

5.02 For GAMA, net cash flow would be positive throughout the period, with net cash balances rising from W 1.1 billion (US\$1.6 million) during the first year of market operations to W 4.5 billion (US\$6.6 million) following the retirement of the Bank loan in the twelvth year. At full development in the third year, annual gross revenues would be W 9.7 billion (US\$14.3 million) about 43% of which would come from market fees, 35% from market rent, 12% from interest income on security deposits which the wholesale companies are required to lodge with GAMA and the rest from other sources. While GAMA's financial future looks strong, an assurance was obtained that SMG would cover any deficits incurred by GAMA.

5.03 The project costs, consisting of investment and market operating costs, would be recovered fully through the various revenues going to GAMA and incremental tax revenues accruing to the Government (Annex 3). The new market would help to reduce tax evasion among the traders and enable the Government to collect taxes, the incremental value of which, at full development, is estimated at W 21.4 billion (US\$31.2 million), with about 53% coming from corporate tax, 23% from value added tax, 13% from defence tax, and the rest from miscellaneous taxes. The combined net receipts accruing to GAMA and the Government become positive during the project's third year and, when projected over a period of 25 years and discounted by 15%, give a net present value of W 57.0 billion (US\$83.2 million).

5.04 The financial rate of return is 28%, and is only moderately sensitive to changes in revenues or costs. The switching values (percentage change in financial benefits which would reduce the net present value to zero at a discount rate of 15%) for Government and GAMA benefits and construction and operating costs are given in Table 5.1. A delay in the onset of benefits of 3.3 years would reduce the rate of return below 15%.

Table 5.1: FINANCIAL SENSITIVITY

Variable	Switching Value (%)
Revenue to Government	-59
Revenue to GAMA	-126
Construction costs	87
Operating costs	286

### Economic Analysis

5.05 Annual incremental benefits at full development would total W 46.1 billion (US\$67.3 million) arising from five sources:

- (a) Reduction in spoilage losses; because of reduced congestion within and near the market, and because of the speed of auctioning and the availability of chilled storage, about 2.2% of daily horticultural product throughput and 1.0% of marine product throughput would be saved from spoilage, representing 26% of total benefits. All but the commission percentage of this benefit would go to producers and shippers.
- (b) Improvement in product quality; the same factors as those noted above also would improve the quality, and hence the auction price, of fruit and vegetables by an estimated 3.3%, and of fish by 2.0%, representing 37% of total benefits. As with benefit source (a), all but the commission percentage would go to producers and shippers.
- (c) Reduction in transport delays; cars and trucks passing near Yongsan market suffer long delays from excessive market traffic, and their costs in idling and running-time depreciation have been estimated. Nearly as important are savings in idling and depreciation costs for intra-market traffic. A distant third in transport delays reduction is the new market's relative proximity to producing areas, which eliminates the need for market suppliers to enter the crowded city center. Altogether these three sources would account for 10% of the economic benefits.
- (d) Savings from backhauls; most shippers presently return to the producing areas with empty trucks, since no good information system exists to match their supply of transport with the needs of Seoul-area businesses for shipping goods to the rest of the country. The new market would provide this linkup for an assumed 50% of the suppliers' trucks, earning efficiency savings equal to 18% of total benefits.
- (e) Yongsan alternative land use; Yongsan's conversion to a high-value-added building materials market is estimated to add about 5% to the current Yongsan site usage value, amounting to 9% of total benefits.

5.06 Cost and benefits have been converted from financial to economic values by applying Bank-estimated conversion factors: 0.80 for consumption goods and standard conversion factor, and 0.90 for capital goods. The value of rice production foregone from the 55 ha market site is taken at world market prices converted to domestic currency using the current market exchange rate and adjusted for local transport, storage and handling costs. The value added tax component of construction costs has been removed, as have tax elements of operating costs of GAMA and market merchants. At a discount rate of 15%, the estimated opportunity costs of capital in Korea, the economic net present value of the project is W 40.5 billion (US\$59.1 million). The economic rate of return of the project is 25% (Annex 3).

Table 5.2: ECONOMIC SENSITIVITY

Variable	Switching Value (%)
Spoilage benefits	-108
Quality benefits	-76
Transport savings	-218
Backhaul benefits	-122
Yongsan land use benefits	-262
Construction costs	121

5.07 The switching values for the five benefit sources and the construction costs are shown in Table 5.2. The rate of return is more sensitive to the quality preservation benefit than the other benefits. The project is relatively insensitive to changes in the transport saving and alternate land use benefits. The economic rate of return is more sensitive to a delay in onset of benefits than the financial rate of return. A delay of 2.8 years would reduce the economic rate of return below 15%.

#### Unquantifiable Benefits

5.08 In addition to the above benefits, the proposed project would serve as a demonstration case which could be replicated in Seoul and the other major cities in the country. The establishment of GAMA, would help to strengthen the institutional framework for the marketing of fruit, vegetables and fish and serve as a model for market authorities in other cities. The introduction of the auctioning system, the wholesale companies and jobbers, coupled with improved marketing intelligence services, constitute major steps towards a more competitive price formation mechanism. The proposed studies would help to define more clearly and comprehensively national policies and



strategies to ensure that efficiency in the marketing subsector catches up with the level of efficiency already achieved in the production subsector. The employment impact of the project is difficult to estimate because of the shifting, part-time or seasonal participation of many merchants and vendors and the secondary employment impact of Yongsan and Garag-dong on surrounding areas. Garag-dong Market can be expected to employ at least 5,000 people directly in jobbers' stalls, wholesale companies, related-items and retail stalls, freezer storage, shipping services and GAMA itself.

#### Project Direct Beneficiaries

5.09 In addition to the Government, the project's principal direct beneficiaries would consist of the consignment wholesale companies, jobbers, shippers and producers. The companies and jobbers would gain from higher commissions on gross sale proceeds arising from improved commodity quality and reduced spoilage; out of this, they would receive incremental commission incomes ranging from 5.5% to 6.6%. The backhaul benefits would go to the shippers some of whom may be producers, either as individuals, farmer groups or cooperatives. It is difficult to accurately quantify the benefits to producers in view of the wide variety of commodities involved and uncertainty as to the proportion of the producers who would ship their produce directly to the new wholesale market without going through intermediaries. However, there is no doubt that the preponderant part of the quality and reduced spoilage benefits would go to those who ship directly, either individually or through groups and cooperatives. Direct shippers would pay a maximum of about 6.6% of the incremental gross benefits to the consignment wholesale companies, and would therefore reap the balance of 93.4% of the benefits. The share accruing to the producers would depend on the extent to which the Government succeeds in its policy to support cooperatives and informal farmer organizations to undertake assembling and shipping directly to the wholesale markets. The project would help to create an institutional framework that is necessary for the success of this policy.

#### Risks

5.10 Realization of the principal economic benefits such as commodity quality preservation and reduced spoilage calls for a high standard of market management which is not widely available in the country at the moment. The proposed training program and overseas study tours are designed to minimize management related risks. Some of the jobbers may be reluctant to move to the new market where they would be subject to more efficient tax collection and where it may take too long a period to build up sufficient volume of business. This risk would be minimized by setting rents and fees at an attractive level compared to going rates, by closing the Yongsan Market upon the completion of the new market, and by keeping the allocation of stalls open to new entrants into the jobber trade.

## 6. AGREEMENTS REACHED AND RECOMMENDATION

6.01 Assurances were obtained on the following principal points:

- (a) SMG would construct the South Ring Road from Daechi-dong to the new market site, including a bridge across the Tancheon River, and complete the work by December 31, 1984 (para. 3.10);
- (b) MAF would submit by September 1, 1982 detailed descriptions of the marketing studies and proposals for their implementation for review by the Bank (para. 3.12);
- (c) All consultants engaged under the project would be employed under terms of reference and under conditions acceptable to the Bank (para. 3.12);
- (d) SMG and MAF would maintain separate accounts for the project, and, after audit by independent auditors acceptable to the Bank, the project accounts, together with the auditors' comments, would be submitted to the Bank within six months of the close of each financial year (para. 3.19);
- (e) SMG would, if necessary, employ a consultant to assist OCE in construction management under terms and conditions acceptable to the Bank (para. 4.03);
- (f) SMG would, by April 1, 1983, present to the Bank for review and comment a detailed plan of action for the closing of the existing wholesale market for fruit, vegetables, and fish at Yongsan and the transfer of its activities and trading community to the new Garag-dong Market (para. 4.04);
- (g) SMG would set up a Steering Committee by October 30, 1982 to undertake the preparatory work leading to the establishment of GAMA (para. 4.05);
- (h) The SMG would forward to the Bank for review and comment by June 30, 1983:
  - (i) GAMA's draft memorandum and articles of incorporation;
  - (ii) draft rules and regulations for operation of the market; and
  - (iii) draft proposals on the structure and levels of market rates, fees and other charges (para. 4.05);

- (i) By July 1, 1983, the Government would appoint the Advisory Committee; by September 30, 1983, SMG would establish GAMA and appoints its President and Directors of Business, Administration, and Technical Divisions (para. 4.06);
- (j) SMG would cause GAMA to generate sufficient revenues from market rents, fees and other charges to cover the Authority's operating costs, adequate depreciation of buildings and equipment, and servicing the part of the Bank loan relating to the construction of the market and any other borrowings; that the situation would be reviewed periodically to ensure continued achievement of these objectives; and that GAMA would maintain separate financial records and accounts which would be annually audited by independent auditors and submitted to the Bank (para. 4.08);
- (k) MAF would, on request, provide the Bank with information concerning proposals for management of agricultural wholesale markets (para. 4.09); and
- (l) SMG would cover any deficit incurred by GAMA (para. 5.02).

6.02 Conditions of effectiveness of the loan would be: (a) execution of the Subsidiary Loan Agreement between the Government and SMG; and (b) that SMG would set up a special account to service the project. The account would be replenished by the Government at quarterly intervals to a level equivalent to the estimated requirement for the next three months. The initial deposit to the account would be made by June 30, 1982 (para. 3.16).

6.03 With the above assurances, the proposed project would be suitable for a Bank loan of US\$50.0 million. The loan would be for a period of 14 years including three years of grace. The borrower would be the Republic of Korea.

KOREA

AGRICULTURAL WHOLESALE MARKETING PROJECT

Proposed National Marketing Improvements for Perishable Commodities, (1981-86)

	US\$ mln	%
<u>Fruit and Vegetables</u>		
Assembly organization	4.6	
Wholesale markets	214.5/a	
Retailing facilities	174.0	
Subtotal	<u>393.1</u>	<u>42</u>
<u>Marine Products</u>		
Consignment markets at landing area	3.3	
Retailing facilities	3.5	
Subtotal	<u>6.8</u>	<u>1</u>
<u>Livestock Products</u>		
Poultry dressing house	8.6	
Slaughtering facilities improvement	18.6	
Meat center	6.3	
Wholesale market and slaughtering facilities units	83.7	
Subtotal	<u>117.2</u>	<u>12</u>
<u>Storing and Processing</u>		
Fruit and vegetables storage	109.3	
Marine products (refrigeration, ice, processing)	72.3	
Milk and livestock (storage, collection, processing)	165.0	
Modernization of other processing facilities	64.1	
Subtotal	<u>410.7</u>	<u>43</u>
<u>Marketing Facilitating Functions</u>		
Packaging and grading	6.8	
Freight cars (fish and livestock)	5.2	
Expansion of information system	1.5	
National marketing master plan study	1.8	
Subtotal	<u>15.3</u>	<u>2</u>
<u>Total /b</u>	<u>943.1</u>	<u>100</u>

/a 12 new wholesale markets in provincial cities and 23 rehabilitated wholesale markets in Seoul and other cities.

/b Total has since been reduced to about US\$887 million, but detailed breakdown is not available.

Source: Ministry of Agriculture and Fisheries. Policy and Programs for the Marketing Improvement of Agricultural and Fishery Products, 1981.

KOREA

AGRICULTURAL WHOLESALE MARKETING PROJECT

Salient Features of the Yongsan Market

	Site (sq m)		Daily throughput (tons)	Quasi- companies	Dealer jobbers	Number of		Employ- ees	Union labor	Daily tons per sq m building /c
	Site	Building				/a	ers /a			
Fruit and vegetables										
Licensed										
Private	29,931	21,402	1,091	1	178	500	35	200	0.051	
NACF	3,412	4,076	51	1	53	-	6	37	0.013	
Unlicensed	45,228	34,526	3,125	2	352	1,640	68	240	0.091	
Subtotal	<u>78,571</u>	<u>60,004</u>	<u>4,267</u>	<u>4</u>	<u>583</u>	<u>2,140</u>	<u>109</u>	<u>477</u>	<u>0.071</u>	
Fish										
Licensed										
Private	-	-	-	-	-	-	-	-	-	
NACF	1,653	1,332	27	1	18	-	16	47	0.020	
Unlicensed	2,215	3,339	273/b	1	142	250	12	-	0.082	
Subtotal	<u>3,868</u>	<u>4,671</u>	<u>280</u>	<u>2</u>	<u>160</u>	<u>250</u>	<u>28</u>	<u>47</u>	<u>0.060</u>	
Total	<u>82,439</u>	<u>64,675</u>	<u>4,557</u>	<u>6</u>	<u>743</u>	<u>2,390</u>	<u>137</u>	<u>524</u>		

/a Yongsan jobbers are a mixture of principal buyers and brokers; retailers include peddlers and hawkers, most of whom are seasonal.

/b 20 tons transferred from NFFC are double-counted.

/c Excludes retail trade.

Source: Korea Rural Economics Institute.

KOREA

AGRICULTURAL WHOLESALE MARKETING PROJECT

Cost Summary Construction and Equipment

Item	Amount Won million
<u>Construction and installation</u>	
Roads and utilities	6,600
Buildings	20,200
Mechanical works	4,100
Electrical works	5,000
Subtotal	<u>35,900</u>
<u>Furnished equipment &amp; materials</u>	
Roads and utilities	4,100
Buildings	6,680
Mechanical works	4,080
Electrical works	3,000
Subtotal	<u>17,860</u>

KOREA

AGRICULTURAL WHOLESALE MARKETING PROJECT

Construction and Installation: Roads and Utilities

Item	Quantity	Unit price (W)	Amount won million
Temporary works		L.S.	530
Earthfill	600,000 m <sup>3</sup>	2,400	1,440
Rockfill	160,000 m <sup>3</sup>	2,200	432
Paving works	3,500,000 m <sup>2</sup>	650	2,275
Reinforced concrete	33,500 m <sup>3</sup>	38,000	1,273
Miscellaneous works			250
Installation costs			400
			<u>6,600</u>

Construction and Installation: Building

Temporary works		L.S.	980
Excavation	60,000 m <sup>3</sup>	750	45
Earthfill	70,000 m <sup>3</sup>	2,400	168
Backfill	12,000 m <sup>3</sup>	1,100	13
Stone pitching	34,000 m <sup>3</sup>	17,000	578
Pile driving	6,550 ea.	14,500	95
Reinforced concrete	85,000 m <sup>3</sup>	38,000	3,230
Prestressed concrete	26,000 m <sup>3</sup>	190,000	4,940
Precast concrete	30,000 m <sup>3</sup>	32,000	960
Plastering	210,000 m <sup>2</sup>	5,200	1,092
Waterproofing	320,000 m <sup>2</sup>	3,800	1,216
Tiles	11,000 m <sup>2</sup>	9,500	105
Doors and windows	49,000 m <sup>2</sup>	35,000	1,715
Painting	130,000 m <sup>2</sup>	1,500	195
Finishing	220,000 m <sup>2</sup>	3,400	748
Miscellaneous works		L.S.	2,315
Installation costs		L.S.	1,805
			<u>20,200</u>

KOREA

AGRICULTURAL WHOLESALE MARKETING PROJECT

Construction and Installation: Mechanical and Electrical

Location	Amount (Won million)	
	Mechanical	Electrical
Fruit and vegetable market	1 376	2,208
Fish market	616	1,110
Administration building	531	970
Service building	209	36
Related item market	148	159
Freezer storage	415	42
Retail storage	21	28
Substation	34	336
Gas station	20	6
Solid waste plant	300	5
Miscellaneous	430	100
	<u>4,100</u>	<u>5,000</u>



KOREA

AGRICULTURAL WHOLESALE MARKETING PROJECT

Furnished Materials: Roads and Utilities

Item	Quantity	Unit price (W)	Amount Won million
Asphaltic concrete	100 000 m <sup>3</sup>	15,000	1,500
Asphalt	2,700 bbl	56,000	151
Paving blocks		L.S.	180
Ready-mix concrete	20,000 m <sup>3</sup>	31,000	620
Cement	3,000 t	43,750	132
Reinforcing steel	3,600 t	275,000	990
Pipes and fittings		L.S.	350
Pumps		L.S.	27
Miscellaneous materials		L.S.	150
			<u>4,100</u>

Furnished Materials: Buildings

Ready-mix concrete	85,600 m <sup>3</sup>	31,000	2,654
Reinforcing steel	8,300 t	242,000	2,008
Cement	2,200 t	43,750	96
Bricks	1,200,000 ea	25	30
Concrete blocks	415 000 ea.	280	116
Waterproof seal	140 000 m <sup>2</sup>	4,200	588
Dry wall	14,300 m <sup>2</sup>	17,400	252
Concrete piles	6,500 ea.	69,000	448
Insulating material	17,000 m <sup>2</sup>	28,700	488
			<u>6,680</u>

KOREA

AGRICULTURAL WHOLESALE MARKETING PROJECT

Furnished Materials: Mechanical

Item	Won million
Halon cylinders	216
Boilers	91
Pumps	98
Fans	146
Air conditioning equipment	92
Radiators	68
Steel pipe	390
Sprinklers and valves	216
Waste treatment plant	341
Fire protection equipment	37
Waste treatment plant*	566
HVAC controls*	138
Freezing plant*	394
Ice making plant*	223
Condenser and evaporator*	667
Miscellaneous material	189
Freight and insurance	208
<u>Total</u>	<u>4,080</u>

\* Denotes imported equipment.

KOREA

AGRICULTURAL WHOLESALE MARKETING PROJECT

Furnished Materials: Electrical

Item	Won million
Display board	622
Display controls	191
Conduit pipes	159
PABX	38
Transformers	118
Power cubicles	421
Control panels	169
Lamps	21
Meters	23
Cables	423
Stand-by generator*	309
Lamps*	86
Computer*	100
Video equipment (security)*	233
Freight and insurance	87
<u>Total</u>	<u>3,000</u>

\* Denotes imported equipment.

KOREA

AGRICULTURAL WHOLESALE MARKETING PROJECT

Estimated Schedule of Expenditures and Expected Price Increases

	Total	1982	1983	1984
	-----	(US\$ million)	-----	-----
<u>Local</u>				
Base cost plus physical contingencies	43.84	15.34	19.73	8.77
Expected price increases	8.26	1.16	4.07	3.03
<u>Foreign</u>				
Base cost plus physical contingencies	44.20	15.47	19.45	9.28
Expected price increases	5.05	0.66	2.47	1.92
<u>Totals</u>				
Base cost plus physical contingencies	88.04	30.81	39.18	18.05
Expected price increases	13.21	1.80	6.51	4.90
<u>Total</u>	<u>101.25</u>	<u>32.61</u>	<u>45.69</u>	<u>22.95</u>
Front end fee on Bank loan	0.75	0.75	-	-
<u>Total Financing</u>	<u>102.0</u>	<u>33.36</u>	<u>45.69</u>	<u>22.95</u>
Annual escalation rates (%)				
Local		14	11	10
Foreign		8.5	7.5	7.0
Multiplier				
Local		.07	.20	.33
Foreign		.04	.13	.21

KOREA

AGRICULTURAL WHOLESALE MARKETING PROJECT

Estimated Schedule of Disbursement

<u>Bank fiscal years</u> <u>and quarters</u>	<u>Cumulative disbursements</u> <u>----- (US\$ million) -----</u>
<u>FY 1982</u>	
3rd	0.75
4th	1.70
<u>FY 1983</u>	
1st	4.60
2nd	7.10
3rd	12.00
4th	15.45
<u>FY 1984</u>	
1st	20.40
2nd	26.80
3rd	32.20
4th	43.60
<u>FY 1985</u>	
1st	46.50
2nd	50.00

KOREA

AGRICULTURAL WHOLESALE MARKETING PROJECT

Proposed Allocation of Loan Proceeds

Category	Costs		Proposed loan
	Total/ <u>a</u> -----	Foreign (US\$ million) -----	
Construction and installation	60.01	23.55	27.00
Disbursement would be 45% of total expenditures.			
Equipment and materials procured through ICB	12.00	12.00	12.00
Disbursement would be 100% of foreign expenditures for directly imported equipment and materials, 100% of ex-factory cost for locally-manufactured equipment and materials, and 65% of imported items procured locally.			
Materials procured through LCB	8.50	6.80	8.00
Disbursement would be 85% of total expenditures.			
Studies and consultants	1.00	0.60	0.60
Disbursement would be 50% of total expenditures, or 100% of foreign exchange costs.			
Unallocated			
Miscellaneous materials	11.30	4.40	
Engineering and supervision	3.00	0	
GAMA establishment	1.50	0	
Physical contingencies	3.94	1.90	
Subtotal	<u>19.74</u>	<u>6.30</u>	<u>1.65</u>
Total Project Cost	101.25	49.25	49.25
Front end fee for Bank loan	<u>0.75</u>	<u>0.75</u>	<u>0.75</u>
Total Financing	102.00	50.00	50.00

/a Includes expected price increase.

KOREA

AGRICULTURAL WHOLESALE MARKETING PROJECT

Cash Flow: Garag-dong Agricultural Market Authority  
(W'000,000)

Project year (PY):	0-1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16-25
<b>Cash Inflow</b>																
Market use fees /a	-	-	3,053	4,120	4,120	4,120	4,120	4,120	4,120	4,120	4,120	4,120	4,120	4,120	4,120	4,120
Rents /b	-	-	2,548	3,397	3,397	3,397	3,397	3,397	3,397	3,397	3,397	3,397	3,397	3,397	3,397	3,397
Interest: Security deposits /c	-	-	890	1,180	1,180	1,180	1,180	1,180	1,180	1,180	1,180	1,180	1,180	1,180	1,180	1,180
Tax deposits /c	-	-	104	195	230	230	230	230	230	230	230	230	230	230	230	230
Parking /d	-	-	474	632	632	632	632	632	632	632	632	632	632	632	632	632
Chilled storage /e	-	-	52	105	105	105	105	105	105	105	105	105	105	105	105	105
Training /f	-	-	58	29	-	-	-	-	-	-	-	-	-	-	-	-
Transfer from Seoul Municipal Government /g	-	181	930	-	-	-	-	-	-	-	-	-	-	-	-	-
Security deposits /h	-	-	7,355	-	-	-	-	-	-	-	-	-	-	-	-	-
Tax deposits /i	-	-	866	356	195	-	-	-	-	-	-	-	-	-	-	-
<b>Total Cash Inflow</b>	-	181	16,330	10,014	9,859	9,664	9,664	9,664	9,664	9,664	9,664	9,664	9,664	9,664	9,664	9,664
<b>Cash Outflow</b>																
<b>Operating Costs</b>																
Base salaries /j	-	60	482	554	554	554	554	554	554	554	554	554	554	554	554	554
Bonuses /k	-	20	161	185	185	185	185	185	185	185	185	185	185	185	185	185
Retirement fund /l	-	5	40	46	46	46	46	46	46	46	46	46	46	46	46	46
Office operating costs /m	-	54	465	499	499	499	499	499	499	499	499	499	499	499	499	499
Electricity /n	-	-	65	86	86	86	86	86	86	86	86	86	86	86	86	86
Heating /o	-	-	346	461	461	461	461	461	461	461	461	461	461	461	461	461
Water /p	-	-	362	483	483	483	483	483	483	483	483	483	483	483	483	483
Cleaning /q	-	-	23	31	31	31	31	31	31	31	31	31	31	31	31	31
Telephone /r	-	5	53	62	62	62	62	62	62	62	62	62	62	62	62	62
Vehicle operation /s	-	4	44	55	55	55	55	55	55	55	55	55	55	55	55	55
Training /t	-	17	14	5	5	5	5	5	5	5	5	5	5	5	5	5
Maintenance and repair /u	-	-	416	748	1,081	1,414	1,663	1,663	1,663	1,663	1,663	1,663	1,663	1,663	1,663	1,663
Miscellaneous /v	-	16	314	322	355	388	413	413	413	413	413	413	413	413	413	413
<b>Subtotal</b>	-	181	2,785	3,537	3,903	4,269	4,543	4,543	4,543	4,543	4,543	4,543	4,543	4,543	4,543	4,543
<b>Debt Service /w</b>																
Interest	-	-	3,174	2,837	2,338	1,925	1,555	1,234	959	723	522	350	203	79	-	-
Principal	-	-	799	2,280	2,075	1,893	1,732	1,582	1,444	1,317	1,203	1,100	1,004	914	-	-
<b>Subtotal</b>	-	-	3,973	5,117	4,413	3,818	3,287	2,816	2,403	2,040	1,725	1,450	1,207	993	-	-
<b>Taxable Net Income /x</b>	-	-	-	594	47	29	103	451	799	1,147	1,495	1,843	2,191	2,539	2,539	2,539
<b>Taxes and Depreciation Reserves</b>																
Defense tax /y	-	-	-	63	3	2	8	43	78	113	148	182	217	252	287	296
Depreciation Reserve fund /aa	-	-	258	258	258	258	258	258	258	258	258	258	258	258	258	258
Residence tax /z	-	-	-	19	1	-	3	13	23	34	44	55	65	76	86	89
<b>Subtotal</b>	-	-	258	340	262	260	269	314	359	405	450	495	540	586	631	643
<b>Total Cash Outflow</b>	-	181	7,016	8,994	8,587	8,347	8,099	7,673	7,305	6,988	6,718	6,488	6,290	6,122	5,174	5,186
<b>Net Cash Flow (excluding deposits)</b>	-	-	1,093	664	1,086	1,317	1,565	1,991	2,339	2,676	2,946	3,176	3,374	3,542	4,490	4,478

- /a Half of 1% of annual transaction value of four fruit-and-vegetable and two fisheries wholesale companies, gas station and freezer company plus W 3,000 per day per shipper (W 600/MT).
- /b Based on W 7,500/pyong/month.
- /c 16% per year earned on security and tax deposits.
- /d W 500/space/day for market-based users; W 1,000/space/day for shippers and W 750/space/day for outside retailers.
- /e Based on approximately 50% capacity utilization by jobbers, at W 0.5/kg-day.
- /f Assumes 144 course-weeks in PY3 at W 400,000/course-week paid by wholesale companies, jobbers and other market participants, and 72 course-weeks in PY4, after which an outside institution would conduct training.
- /g This amount covers estimated costs up to the time when the authority receives its first income from the market.
- /h W 200,000/pyong from wholesale companies, jobbers and related-items stalls; W 150,000/pyong from market-based retailers; W 250,000/pyong from the freezer company and gas station.
- /i Five percent of the pretax net cash flow of the wholesale companies and freezer company.
- /j Public corporation salary scales. Seventeen staff members would work an average of 6 months during PY2; 34 more would join them at the start of PY3, and the full complement of 125 staff members would be at work when market operations begin.
- /k Four months of base salaries.
- /l One month of base salaries.
- /m Ninety percent of base salaries.
- /n W 47/kWh x 153,050 kWh/month x 12 months/year (9 months in PY3).
- /o For administration building, service building and guard houses, a total of 81,720,000 BTU/hour x 1,050 hours/year (788 hours in PY3) ÷ 18,300 BTU/lb fuel oil x 0.47746 liters/lb fuel oil x W 206/liter.
- /p W 110/cu m x 366,100 cu m/month x 12 months/year (9 months in PY3).
- /q W 500/pyong/month x 5,162 pyong x 12 months/year (9 months in PY3).
- /r W 200,000/set/month until the market opens, then W 260,000/set/month. Four sets for 6 months in PY2, 10 sets for 3 months in PY3, then 20 sets.
- /s W 330,000/car/month x 7 cars x 12 months/year (2 cars beginning half-way through PY2), plus garbage truck operating costs of diesel fuel (3 km/trip x 50 trips/day x 350 days/year x 1.7 km/liter x W 255/liter = W 22.76 million) and miscellaneous (20% of fuel cost).
- /t For authority staff only, mainly immediately before and after the market opens in PY3.
- /u A growing percentage of the cost of buildings, machinery, equipment and civil works originally costing W 83.15 million: 0.5% in PY3, 0.9% in PY4, 1.3% in PY5, 1.7% in PY6, and stable at 2.0% from PY7.
- /v Ten percent of other nondebt-service cash outflow.
- /w Subsidy loan of US\$49.4 million, deflated to 1982 prices. Interest is 11.9% per year on the unpaid beginning-of-period balance, paid by the Government until end of first quarter of PY3. Principal is repaid over 13 years, with 3 years of grace, in 22 equal semiannual installments. PY3 principal is the repayment of SMG transfers in PY2 and PY3.
- /x Calculated by subtracting transfers from SMG, security deposits and tax from cash inflow, subtracting interest payments from cash outflow, and deducting from the resultant net flow the cost of the depreciation of fixed assets. The depreciation deduction assumes a 50-year life for buildings and civil works worth W 58.34 billion, a 20-year life for machinery and equipment worth W 18.60 billion, a 10-year for machinery and equipment worth W 6.20 billion, and a 5-year life for start-up capital items worth W 625 million. Defense and residence taxes are zero in PY3, when taxable net income would be negative.
- /y One fourth of the normal corporation tax (25% of taxable income under W 50 y million plus 40% of taxable income exceeding W 50 million, from which the authority is exempted).
- /z Seven and one-half percent of the normal corporation tax.
- /aa A sinking fund calculated to provide a sum equal to the original cost of buildings, machinery and equipment at the end of their average useful lives (50 years for buildings and civil works, 10 or 20 years for two broad classes of machinery and equipment).



KOREA

AGRICULTURAL WHOLESALE MARKETING PROJECT

Cash Flow: Fruit and Vegetable Consignment Wholesale Company  
(W'000,000)

	Project year: 0-2	3	4	5	6-25
<u>Cash Inflow</u>					
Fruit commissions /a	-	2,578.2	3,471.7	3,471.7	3,471.7
Vegetable commissions /b	-	3,748.7	5,102.1	5,102.1	5,102.1
Loan collections /c	-	1,816.1	2,270.2	2,270.2	2,270.2
Interest on cash balances /d	-	387.7	514.0	753.4	763.3
Sales of company shares /e	-	428.0	-	-	-
Long-term loans /f	-	860.5	-	-	-
Short-term loans /g	-	1,911.7	-	-	-
Subtotal	-	11,730.9	11,358.0	11,597.4	11,607.3
<u>Cash Outflow</u>					
Base salaries /h	-	422.0	510.4	510.4	510.4
Bonuses /i	-	140.7	170.1	170.1	170.1
Retirement fund /j	-	33.0	42.5	42.5	42.5
Office operating costs /k	-	519.5	459.3	459.3	459.3
Market use fee /l	-	479.3	649.5	649.5	649.5
Rental fee /m	-	313.9	418.5	418.5	418.5
Electricity /n	-	44.4	59.2	59.2	59.2
Heating /o	-	31.0	41.4	41.4	41.4
Water /p	-	19.0	25.4	25.4	25.4
Cleaning /q	-	40.4	53.9	53.9	53.9
Telephone /r	-	31.2	31.2	31.2	31.2
Vehicle operation /s	-	15.8	15.8	15.8	15.8
Parking /t	-	6.3	8.4	8.4	8.4
Training /u	-	9.6	4.8	4.8	4.8
Credit for farmers and shippers /c	-	1,911.7	2,490.4	2,490.4	2,490.4
Commission rebates to farmers, shippers /v	-	632.7	857.4	857.4	857.4
Debt service:					
Long-term loan principal /w	-	368.8	491.7	-	-
Long-term loan interest /x	-	166.0	92.2	-	-
Short-term loan principal /y	-	1,911.7	-	-	-
Short-term loan interest /z	-	113.1	-	-	-
Facility security deposit /aa	-	930.0	-	-	-
Subtotal	-	8,140.1	6,321.3	5,737.4	5,737.4
<u>Net Cash Flow Before Tax, Depreciation Reserve</u>	-	3,590.8	5,036.7	5,860.0	5,869.9
<u>Taxes and Depreciation Reserve</u>					
Value added tax /bb	-	575.2	779.4	779.4	779.4
Corporation tax /cc	-	1,428.8	2,007.2	2,336.5	2,340.5
Defense tax /dd	-	357.2	501.8	584.1	585.1
Residence tax /ee	-	107.2	150.5	175.2	175.5
Social welfare fund /ff	-	89.8	125.9	146.5	146.7
Tax deposit /gg	-	179.5	72.3	41.2	-
Depreciation reserve fund /hh	-	21.8	29.0	29.0	29.0
Subtotal	-	2,759.5	3,666.1	4,091.9	4,056.2
<u>Net Cash Flow After Tax, Depreciation Reserve</u>	-	831.3	1,370.6	1,768.1	1,813.7
Dividends to shareholders /ii	-	415.7	685.3	1,591.3	1,632.3
<u>Net Cash Flow</u>	-	415.6	685.3	176.8	181.4

- /a Commission rate including value added tax. Market operates only 9 months during PY3.
- /b Commission rate including value added tax. Market operates only 9 months during PY3.
- /c Based on each wholesale company assuming the credit functions of the jobbers and small wholesalers which it would absorb, 74.2% of them make loans to farmers and shippers averaging W 30 379 000 per lending shop. PY3 credit and repayment volumes are 80% of full development (PY4). Default losses of 5% are reflected in loan collections.
- /d Average 24%/year. Average cash balance is half of net cash flow before tax and depreciation reserve - tax deposit + sum of previous years' net cash flows - average farmer-shipper loans outstanding (except in PY3 when such loans are not self-financed). Because the company faces many investment options, only PY3 and PY4 net cash flows are applied to interest-earning, which stabilizes in PY6 after the last tax deposit.
- /e Jobbers would each invest W 2,000,000 in their wholesale company, the total to be matched by other investors (producers, shippers, etc.).
- /f Loan amount is the facility security deposit (W 930,000,000) + the initial tax deposit (W 179,500,000) + the physical start-up capital cost (W 175,000,000) - share equity (W 424,000,000).
- /g Equals the amount of farmer-shipper credit in PY3, W 1,911 700,000, and self-financed out of cash balances in succeeding years.
- /h Twenty-nine staff are hired for a full 12 months/year beginning in PY3; the remaining 115 work 9 months of PY3 and 12 months/year beginning in PY4.
- /i One-third of base salaries
- /j One-twelfth of base salaries.
- /k Ninety percent of base salaries, except in PY3 when W 175 000,000 of physical start-up capital costs are incurred.
- /l Total transaction value x 0.5%.
- /m W 7,500/pyong/month x 4,650 pyongs x 12 months/year. PY3 = 9 months.
- /n W 47/kWh x 105,000 kWh/month x 12 months/year. PY3 = 9 months.
- /o Based on heat value of 831 cu m of natural gas/hour for fruit and vegetable market (= 29,533,400 BTU/hour) ÷ 4 wholesale companies x 1,050 hours/year ÷ 18,300 BTU/lb of fuel oil x 0.47746 liters/lb of fuel oil (specific gravity 0.955) x W 206/liter. PY3 = 75% of PY4.
- /p W 110/cu m x 19,228 cu m/month x 12 months/year. PY3 = 9 months.
- /q Internal cleaning. W 600/pyong/month x 4,650 pyongs x 12 months/year. PY3 = 9 months. External cleaning: 3.030 MT/day ÷ 4 wholesale companies x 3.357% fruits and vegetable waste x 350 days/year = 8.900 MT/year. Other waste = 25% of fruit and vegetable waste = 2,225 MT/year. Removal cost = W 11,000/6 MT garbage truck x (8 900 + 2,225) MT.
- /r W 260,000/month/set x 10 sets x 12 months/year
- /s W 330,000/month/vehicle x 4 vehicles x 12 months/year.
- /t W 500/space/day x 43 spaces x 350 days/year.
- /u W 400,000/course-week x 24 course-weeks in PY3, 12 course-weeks/year thereafter.
- /v Fruit and vegetable commissions x 10%.
- /w The company pays off its long-term loan principal in 7 equal installments, 3 in PY3 and 4 in PY4.
- /x At 30%/year interest rate 7.5%/quarter on beginning-of-quarter balance.
- /y Sixty percent of total credit goes to farmers and is borrowed for 100 days by the company. Forty percent goes to shipper-assemblers and is borrowed for 30 days.
- /z Thirty percent per year interest rate on unpaid balance.
- /aa W 200,000/pyong x 4,650 pyongs.
- /bb One-eleventh of total commissions.
- /cc One quarter of the first W 50,000,000 of pretax net cash flow, and 40% of any excess over W 50,000,000.
- /dd One-quarter of the corporation tax.
- /ee Seven and one-half percent of the corporation tax.
- /ff Two and one-half percent of pretax net cash flow.
- /gg Five percent of pretax net cash flow, less the sum of previous tax deposits.
- /hh Payments to cover the cost of replacing office equipment, forklifts, cars and other equipment and supplies worth W 145,000,000, having an average life of 5 years.
- /ii Half of net cash flow after tax and depreciation reserve in PY3 and PY4, and 90% after PY4 when company operations would have stabilized and contingency fund requirements been minimized.

## KOREA

## AGRICULTURAL WHOLESALE MARKETING PROJECT

Cash Flow: Fish Consignment Wholesale Company  
(W'000,000)

	Project year: 0-2	3	4	5	6-25
<u>Cash Inflow</u>					
Commissions /a	- 3,094.6	4,166.9	4,166.9	4,166.9	4,166.9
Loan collections /b	- 1,040.9	1,301.1	1,301.1	1,301.1	1,301.1
Interest on cash balances /c	- 135.2	213.1	301.5	305.1	305.1
Sales of company shares /d	- 380.0	-	-	-	-
Long-term loans /e	- 311.7	-	-	-	-
Short-term loans /f	- 1,095.7	-	-	-	-
Subtotal	- 6,058.1	5,681.1	5,769.5	5,773.1	5,773.1
<u>Cash Outflow</u>					
Base salaries /g	- 372.0	448.8	448.8	448.8	448.8
Bonuses /h	- 124.0	149.6	149.6	149.6	149.6
Retirement fund /i	- 31.0	37.4	37.4	37.4	37.4
Office operating costs /j	- 459.3	403.9	403.9	403.9	403.9
Market use fee /k	- 281.3	378.8	378.8	378.8	378.8
Rental fee /l	- 170.3	227.1	227.1	227.1	227.1
Electricity /m	- 41.8	55.7	55.7	55.7	55.7
Heating /n	- 25.2	33.6	33.6	33.6	33.6
Water /o	- 12.4	16.6	16.6	16.6	16.6
Cleaning /p	- 16.3	21.8	21.8	21.8	21.8
Telephone /q	- 18.7	25.0	25.0	25.0	25.0
Vehicle operation /r	- 11.9	15.8	15.8	15.8	15.8
Parking /s	- 5.6	7.5	7.5	7.5	7.5
Training /t	- 9.6	4.8	4.8	4.8	4.8
Credit for producers /b	- 1,095.7	1,369.6	1,369.6	1,369.6	1,369.6
Commission rebates to producers /u	- 309.5	416.7	416.7	416.7	416.7
Debt service.					
Long-term loan principal /v	- 133.7	178.1	-	-	-
Long-term loan interest /w	- 60.1	33.4	-	-	-
Short-term loan principal /x	- 1,095.7	-	-	-	-
Short-term loan interest /y	- 27.4	-	-	-	-
Facility security deposit /z	- 504.6	-	-	-	-
Subtotal	- 4,806.1	3,824.2	3,612.7	3,612.7	3,612.7
Net Cash Flow Before Tax,					
Depreciation Reserve	- 1,252.0	1,856.9	2,156.8	2,160.4	2,160.4
<u>Taxes and Depreciation Reserve</u>					
Value added tax /aa	- 281.3	378.8	378.8	378.8	378.8
Corporation tax /bb	- 493.3	735.3	855.2	856.7	856.7
Defense tax /cc	- 123.3	183.8	213.8	214.2	214.2
Residence tax /dd	- 37.0	55.1	64.1	64.3	64.3
Social welfare fund /ee	- 31.3	46.4	53.9	54.0	54.0
Tax deposit /ff	- 62.6	30.2	15.0	-	-
Depreciation reserve fund /gg	- 15.5	20.6	20.6	20.6	20.6
Subtotal	- 1,044.3	1,450.2	1,601.4	1,588.6	1,588.6
Net Cash Flow After Tax,					
Depreciation Reserve	- 207.7	406.7	555.4	571.8	571.8
Dividends to shareholders /hh	- 103.9	203.4	499.9	514.6	514.6
Net Cash Flow	- 103.8	203.3	55.5	57.2	57.2

- /a Commission rate including value added tax. Market operates only 9 months during PY3.
- /b Based on each wholesale company assuming the credit functions of the jobbers and small wholesalers which it would absorb. With an estimated annual production loan volume of W 14,417,000 per small wholesaler stall, and an assumed default write-off of 5%, loan collections would be  $(1-0.05) \times 95 \times W 14,417,000 = W 1,301,134,000$  in PY4, and PY3 production loans are 80% of PY4 levels.
- /c Company earns 24%/year on average cash balance of half of net cash flow before tax and depreciation reserve - tax deposit + sum of previous years' net cash flows - average fishing loans outstanding (except in PY3 when such loans are not self-financed). Because of the variety of expenditure and investment options open to the company, only PY3 and PY4 net cash flows are applied to interest-earning, which stabilizes in PY6 after the last tax deposit.
- /d Jobbers would each invest W 2,000,000 in their wholesale company, the total to be matched by other investors (producers, shippers, etc.).
- /e Loan amount is the facility security deposit (W 200,000/pyung  $\times$  2,523 pyongs = W 504,600,000) + the initial tax deposit (W 62,600,000) + the physical start-up capital cost (W 124,500,000) - share equity (W 380,000,000).
- /f Equals the amount of fishing loans in PY3, W 1,095,700,000, these loans are self-financed in succeeding years.
- /g Twenty-six staff are hired for a full 12 months/year beginning in PY3, the remaining 102 work 9 months of PY3 and 12 months/year beginning in PY4.
- /h One-third of base salaries.
- /i One-twelfth of base salaries.
- /j Ninety percent of base salaries, except in PY3 when W 124,500,000 of physical start-up capital costs are incurred.
- /k Total transaction value  $\times$  0.5%.
- /l W 7,500/pyong/month  $\times$  2,523 pyongs  $\times$  12 months/year (9 months in PY3).
- /m W 47/kWh  $\times$  98,750 kWh/month  $\times$  12 months/year (9 months in PY3).
- /n Based on heat value of 339 cu m of natural gas/hour for fishery market ( $= 11,904,663$  BTU/hour)  $\div$  2 wholesale companies  $\times$  1.050 hours/year  $\div$  18,300 BTU/lb of fuel oil  $\times$  0.47746 liters/lb of fuel oil (at specific gravity 0.955)  $\times$  W 206/liter. PY3 = 75% of PY4.
- /o W 110/cu m  $\times$  12,550 cu m/month  $\times$  12 months/year (9 months in PY3).
- /p Internal cleaning: W 600/pyung/month  $\times$  2,523 pyongs  $\times$  12 months/year. External cleaning: 540 MT/day  $\div$  2 wholesale companies  $\times$  1.3% fishery waste  $\times$  350 days/year = 1,229 MT/year. Other waste = 60% of fishery waste = 737 MT/year. Removal cost = W 11,000/6 MT garbage truck  $\times$  (1,229 + 737) MT.
- /q W 260,000/month/set  $\times$  8 sets  $\times$  12 months/year (9 months in PY3).
- /r W 330,000/month/vehicle  $\times$  4 vehicles  $\times$  12 months/year (9 months in PY3).
- /s W 500/space/day  $\times$  43 spaces  $\times$  350 days/year (263 days in PY3).
- /t W 400,000/course-week  $\times$  24 course-weeks in PY3, 12 course-weeks/year thereafter.
- /u Fruit and vegetable commissions  $\times$  10%.
- /v Repaid in 7 equal installments, 3 in PY3, 4 in PY4.
- /w Paid at 7.5%/quarter on beginning-of-quarter balance.
- /x Repaid in 30 days.
- /y Thirty percent per year on unpaid balance.
- /z W 200,000/pyong  $\times$  2,523 pyongs.
- /aa One-eleventh of commissions.
- /bb W 12,500,000 plus 40% of pretax net cash flow in excess of W 50,000,000.
- /cc One-quarter of the corporation tax.
- /dd Seven and one-half percent of the corporation tax.
- /ee Two and one-half percent of pretax net cash flow.
- /ff Five percent of pretax net cash flow, less the sum of previous tax deposits.
- /gg Payments to cover the cost of replacing office equipment forklift cars and other equipment and supplies worth W 103,000,000, having an average life of 5 years.
- /hh Half of net cash flow after tax and depreciation reserve in PY3 and PY4, and 90% after PY4, when company operations would have stabilized and contingency fund requirements been minimized.

KOREA

AGRICULTURAL WHOLESALE MARKETING PROJECT

Cash Flow Fruit Jobber - Yongsan vs. Garag-dong  
(W'000)

	Project year.	0-2	3	4	5	6-25
<u>Without Project - Yongsan</u>						
<u>Cash Inflow</u>						
Commission/markup /a		56,511	56,511	56,511	56,511	56,511
Loan collections /b		23,873	23,873	23,873	23,873	23,873
Short-term loans /c		10,345	10,345	10,345	10,345	10,345
Subtotal		<u>90,729</u>	<u>90,729</u>	<u>90,729</u>	<u>90,729</u>	<u>90,729</u>
<u>Cash Outflow</u>						
Wages /d		6,600	6,600	6,600	6,600	6,600
Office operating costs /e		4,950	4,950	4,950	4,950	4,950
Stall rental /f		1,115	1,115	1,115	1,115	1,115
Telephone /g		2,340	2,340	2,340	2,340	2,340
Electricity and water /h		1,013	1,013	1,013	1,013	1,013
Cleaning /i		63	63	63	63	63
Credit for farmers and shippers /j		26,525	26,525	26,525	26,525	26,525
Commission rebates to farmers, shippers /k		8,477	8,477	8,477	8,477	8,477
Debt service:						
Security deposit interest /l		307	307	307	307	307
Short-term loan interest /m		721	721	721	721	721
Short-term loan principal /n		10,345	10,345	10,345	10,345	10,345
Subtotal		<u>62,456</u>	<u>62,456</u>	<u>62,456</u>	<u>62,456</u>	<u>62,456</u>
Net Cash Flow		<u>28,273</u>	<u>28,273</u>	<u>28,273</u>	<u>28,273</u>	<u>28,273</u>

Project year:	0-2	3	4	5	6-25
<u>With Project - Garag-dong /n</u>					
<u>Cash Inflow</u>					
Commission /o	56,511	54,972	54,459	54,459	54,459
Dividends on wholesale company shares /p	-	1,961	3,233	7,506	7,700
Loan for share purchase /q	-	1,500	-	-	-
Security deposit /r	-	2,625	-	-	-
Loan collections	23,873	5,968	-	-	-
Short-term loans	10,345	2,586	-	-	-
Subtotal	<u>90,729</u>	<u>69,612</u>	<u>57,692</u>	<u>61,965</u>	<u>62,159</u>
<u>Cash Outflow</u>					
Wages, office operations, telephone, electricity and water /s	14,903	14,903	14,903	14,903	14,903
Stall rental /t	1,115	1,190	1,215	1,215	1,215
Cleaning /u	63	77	81	81	81
Chilled storage /v	-	126	252	252	252
Credit for farmers and shippers	26,525	6,631	-	-	-
Commission rebates for farmers, shippers	8,477	2,119	-	-	-
Wholesale company share purchase	-	2,000	-	-	-
Security deposits /w	-	2,700	-	-	-
Debt service:					
Security deposit interest /x	307	307	154	-	-
Security deposit principal /x	-	-	512	512	-
Share purchase interest /y	-	338	375	75	-
Share purchase principal /y	-	-	500	1,000	-
Short-term loan interest	721	180	-	-	-
Short-term loan principal	10,345	2,586	-	-	-
Contingencies and moving costs /z	-	2,987	1,799	1,804	1,645
Valued added tax /aa	-	3,713	4,951	4,951	4,951
Subtotal	<u>62,456</u>	<u>39,857</u>	<u>24,742</u>	<u>24,793</u>	<u>23,047</u>
<u>Net Cash Flow</u>	<u>28,273</u>	<u>29,755</u>	<u>32,950</u>	<u>37,172</u>	<u>39,112</u>
<u>Incremental Net Cash Flow</u>	<u>-</u>	<u>1,482</u>	<u>4,677</u>	<u>8,899</u>	<u>10,839</u>
<u>Financial Rate of Return:</u>	Greater than <u>50%</u>				

- /a The markup is a weighted average of commissions and margins of legal wholesale market jobbers, NACF jobbers and unlicensed wholesalers.
- /b Ninety percent of loans to farmers and shippers totaling W 26,525,000.
- /c Thirty-nine percent of loans to farmers and shippers.
- /d Two hired workers x W 275,000/worker/month x 12 months/year.
- /e Seventy-five percent of wages.
- /f W 8,850/pyong/month x 10.5 pyongs x 12 months/year.
- /g W 195,000/month x 12 months/year.
- /h W 84,375/month x 12 months/year.
- /i W 500/pyong/month x 10.5 pyongs x 12 months/year.
- /j W 25,161,000 to farmers for production and W 1,364,000 to shippers for collection and transport.
- /k Fifteen percent of commission/markup.
- /l W 250,000/pyong x 10.5 pyongs x 39% average proportion of operating capital borrowed x 30%/year interest rate.
- /m (W 25,161,000 x 3.5 month farmer credit + W 1,364,000 x 0.5 month shipper credit) x 39% average proportion of operating capital borrowed x 2.5%/month interest rate.
- /n PY1, PY2 and first quarter of PY3 have cash inflow/outflow values identical to those of the "without project" case. Notes below refer to PY3 and beyond.
- /o 863,000 kg/day Garag-dong fruit throughput ÷ 169 fruit jobbers x 350 days/year x W 679/kg x 1.01 quality premium in PY3 (1.02 in subsequent years) x 4.4% commission.
- /p In PY3 and PY4, 25% of each fruit and vegetable wholesale company's net cash flow after tax and depreciation reserve would be divided equally among its 106 jobbers. From PY5, this proportion would be 45%.
- /q Seventy-five percent of W 2,000,000 of shares purchased at the start of the second quarter of PY3.
- /r W 250,000 x 10.5 pyongs returned by landlords at Yongsan.
- /s These are identical to the corresponding costs in the "without project" case.
- /t At Garag-dong, W 7,500/pyong/month x 13.5 pyongs x 12 months/year.
- /u At Garag-dong, W 500/pyong/month x 13.5 pyongs x 12 months/year.
- /v W 0.5/kg-day x 504,000 kg-days (252,000 kg-days in PY3).
- /w W 200,000/pyong x 13.5 pyongs.
- /x Original security deposit debt is amortized in two equal payments, half at the start of PY4 and half at the start of PY5. Interest is 30%/year on the unpaid beginning-of-year balance.
- /y Thirty percent interest per year on the unpaid beginning-of-period balance. Amortization is in three equal payments at mid-PY4, start of PY5 and mid-PY5.
- /z Contingency allowance is 10% of other costs at Garag-dong, excluding value added tax. Moving costs are W 500,000 in PY3.
- /aa One-eleventh of total transaction value at Garag-dong.

KOREA

AGRICULTURAL WHOLESALE MARKETING PROJECT

Cash Flow. Vegetable Jobber - Yongsan vs. Garag-dong  
(W'000)

	Project year: 0-2	3	4	5	6-25
<hr/>					
<u>Without Project - Yongsan</u>					
<u>Cash Inflow</u>					
Commission/markup /a	62,069	62,069	62,069	62,069	62,069
Loan collections /b	23,873	23,873	23,873	23,873	23,873
Short-term loans /c	10,345	10,345	10,345	10,345	10,345
Subtotal	<u>96,287</u>	<u>96,287</u>	<u>96,287</u>	<u>96,287</u>	<u>96,287</u>
<u>Cash Outflow</u>					
Wages /d	6,600	6,600	6,600	6,600	6,600
Office operating costs /e	4,950	4,950	4,950	4,950	4,950
Stall rental /f	1,805	1,805	1,805	1,805	1,805
Telephone /g	2,340	2,340	2,340	2,340	2,340
Electricity and water /h	1,013	1,013	1,013	1,013	1,013
Cleaning /i	102	102	102	102	102
Credit for farmers and shippers /j	26,525	26,525	26,525	26,525	26,525
Commission rebates to farmers, shippers /k	9,310	9,310	9,310	9,310	9,310
Debt service:					
Security deposit interest /l	497	497	497	497	497
Short-term loan interest /m	721	721	721	721	721
Short-term loan principal /c	10,345	10,345	10,345	10,345	10,345
Subtotal	<u>64,208</u>	<u>64,208</u>	<u>64,208</u>	<u>64,208</u>	<u>64,208</u>
Net Cash Flow	32,079	32,079	32,079	32,079	32,079



Project year:	0-2	3	4	5	6-25
<u>With Project - Garag-dong /n</u>					
<u>Cash Inflow</u>					
Commission /o	62,069	54,809	53,478	53,478	53,478
Dividends on wholesale company shares /p	-	1,961	3,233	7,506	7,700
Loan for share purchase /q	-	1,500	-	-	-
Security deposit /r	-	4,250	-	-	-
Loan collections	23,873	5,968	-	-	-
Short-term loans	10,345	2,586	-	-	-
Subtotal	<u>96,287</u>	<u>71,074</u>	<u>56,711</u>	<u>60,984</u>	<u>61,178</u>
<u>Cash Outflow</u>					
Wages, office operations, telephone, electricity and water /s	14,903	14,903	14,903	14,903	14,903
Stall rental /t	1,805	1,362	1,215	1,215	1,215
Cleaning /u	102	86	81	81	81
Chilled storage /v	-	9	19	19	19
Credit for farmers and shippers	25,525	6,631	-	-	-
Commission rebates for farmers, shippers	9,310	2,328	-	-	-
Wholesale company share purchase	-	2,000	-	-	-
Security deposits /w	-	2,700	-	-	-
Debt service:					
Security deposit interest /x	497	148	32	-	-
Security deposit principal /x	-	-	-	108	-
Share purchase interest /y	-	338	375	75	-
Share purchase principal /y	-	-	500	1,000	-
Short-term loan interest	721	180	-	-	-
Short-term loan principal	10,345	2,586	-	-	-
Contingencies and moving costs /z	-	2,995	1,712	1,740	1,622
Valued added tax /aa	-	3,572	4,862	4,862	4,862
Subtotal	<u>64,208</u>	<u>39,838</u>	<u>23,699</u>	<u>24,003</u>	<u>22,702</u>
Net Cash Flow	<u>32,079</u>	<u>31,236</u>	<u>33,012</u>	<u>36,981</u>	<u>38,476</u>
Incremental Net Cash Flow	-	(843)	933	4,902	6,397
Financial Rate of Return: Greater than	50%				

- /a The markup is a weighted average of commissions and margins of legal wholesale market jobbers, NACF jobbers and unlicensed wholesalers.
- /b Ninety percent of loans to farmers and shippers totaling W 26,525,000.
- /c Thirty-nine percent of loans to farmers and shippers.
- /d Two hired workers x W 275,000/worker/month x 12 months/year.
- /e Seventy-five percent of wages.
- /f W 8,850/pyong/month x 17 pyongs x 12 months/year.
- /g W 195,000/month x 12 months/year.
- /h W 84,375/month x 12 months/year.
- /i W 500/pyong/month x 17 pyongs x 12 months/year.
- /j W 25,161,000 to farmers for production and W 1,364,000 to shippers for collection and transport.
- /k Fifteen percent of commission/markup.
- /l W 250,000/pyong x 17 pyongs x 39% average proportion of operating capital borrowed x 30%/year interest rate.
- /m (W 25,161,000 x 3.5 month farmer credit + W 1,364,000 x 0.5 month shipper credit) x 39% average proportion of operating capital borrowed x 2.5%/month interest rate.
- /n PY1, PY2 and first quarter of PY3 have cash inflow/outflow values identical to those of the "without project" case. Notes below refer to PY3 and beyond.
- /o At 4.4% commission.
- /p In PY3 and PY4, 25% of each fruit and vegetable wholesale company's net cash flow after tax and depreciation reserve would be divided equally among its 106 jobbers. From PY5, this proportion would be 45%.
- /q Seventy-five percent of W 2,000,000 of shares purchased at the start of the second quarter of PY3.
- /r W 250,000 x 17 pyongs returned by landlords at Yongsan.
- /s These are identical to the corresponding costs in the "without project" case.
- /t At Garag-dong, W 7,500/pyong/month x 13.5 pyongs x 12 months/year.
- /u At Garag-dong, W 500/pyong/month x 13.5 pyongs x 12 months/year.
- /v W 0.5/kg-day x 38,000 kg-days (19,000 kg-days in PY3).
- /w W 200,000/pyong x 13.5 pyongs.
- /x Original security deposit debt is reduced to W 108,000 by the much smaller Garag-dong security deposit required; the debt is carried at 30%/year to the beginning of PY5, then paid off in a single payment.
- /y Thirty percent interest per year on the unpaid beginning-of-period balance. Amortization is in three equal payments at mid-PY4, start of PY5 and mid-PY5.
- /z Contingency allowance is 10% of other costs at Garag-dong, excluding value added tax. Moving costs are W 500,000 in PY3.
- /aa One-eleventh of total transaction value at Garag-dong.

KOREA

AGRICULTURAL WHOLESALE MARKETING PROJECT

Cash Flow: Fresh Fish Wholesaler (Existing Markets)  
vs. Jobber (Garag-dong)  
(W'000)

	Project year: 0-2	3	4	5	6-25
<u>Without Project - Existing Markets</u>					
<u>Cash Inflow</u>					
Commission/markup /a	27,730	27,730	27,730	27,730	27,730
Loan collections /b	12,975	12,975	12,975	12,975	12,975
Short-term loans /c	2,307	2,307	2,307	2,307	2,307
Subtotal	<u>43,012</u>	<u>43,012</u>	<u>43,012</u>	<u>43,012</u>	<u>43,012</u>
<u>Cash Outflow</u>					
Wages /d	8,100	8,100	8,100	8,100	8,100
Office operating costs /e	4,500	4,500	4,500	4,500	4,500
Stall rental /f	980	980	980	980	980
Telephone /g	2,340	2,340	2,340	2,340	2,340
Electricity and water /h	420	420	420	420	420
Heating /i	500	500	500	500	500
Ice /j	1,160	1,160	1,160	1,160	1,160
Credit for fishermen	14,417	14,417	14,417	14,417	14,417
Debt service:					
Security deposit interest /k	27	27	27	27	27
Short-term loan interest /l	58	58	58	58	58
Short-term loan principal /c	2,307	2,307	2,307	2,307	2,307
Value added tax /m	2,003	2,003	2,003	2,003	2,003
Subtotal	<u>36,812</u>	<u>36,812</u>	<u>36,812</u>	<u>36,812</u>	<u>36,812</u>
<u>Net Cash Flow</u>	<u>6,200</u>	<u>6,200</u>	<u>6,200</u>	<u>6,200</u>	<u>6,200</u>

	Project year: 0-2	3	4	5	6-25
<u>With Project - Garag-dong /n</u>					
<u>Cash Inflow</u>					
Commission /o	27,730	24,749	23,991	23,991	23,991
Dividends on wholesale company shares /p	-	547	1,070	2,631	2,709
Loan for share purchase /q	-	1,500	-	-	-
Security deposit /r	-	554	-	-	-
Loan collections	12,975	3,244	-	-	-
Short-term loans	2,307	577	-	-	-
Subtotal	<u>43,012</u>	<u>31,171</u>	<u>25,061</u>	<u>26,622</u>	<u>26,700</u>
<u>Cash Outflow</u>					
Wages /s	8,100	6,150	5,500	5,500	5,500
Office operations /t	4,500	3,975	3,800	3,800	3,800
Rental fee /u	980	859	819	819	819
Telephone /g	2,340	2,340	2,340	2,340	2,340
Electricity and water /v	420	250	194	194	194
Heating	500	-	-	-	-
Cleaning /w	-	41	55	55	55
Ice /x	1,160	1,222	1,243	1,243	1,243
Chilled storage /y	-	134	269	269	269
Credit for fishermen	14,417	3,604	-	-	-
Wholesale company share purchase	-	2,000	-	-	-
Security deposit /z	-	1,820	-	-	-
Debt service:					
Security deposit interest /aa	27	27	27	-	-
Security deposit principal /aa	-	-	-	89	-
Share purchase interest /bb	-	338	375	75	-
Share purchase principal /bb	-	-	500	1,000	-
Short-term loan interest	58	14	-	-	-
Short-term loan principal	2,307	577	-	-	-
Contingencies and moving costs /cc	-	2,676	1,512	1,538	1,422
Value added tax /dd	2,003	2,145	2,181	2,181	2,181
Subtotal	<u>36,812</u>	<u>28,172</u>	<u>18,815</u>	<u>19,103</u>	<u>17,823</u>
<u>Net Cash Flow</u>	<u>6,200</u>	<u>2,999</u>	<u>6,246</u>	<u>7,519</u>	<u>8,877</u>
<u>Incremental Net Cash Flow</u>	<u>-</u>	<u>(3,201)</u>	<u>46</u>	<u>1,319</u>	<u>2,677</u>
<u>Financial Rate of Return:</u>	<u>48%</u>				

- /a At 3.6% weighted average commission or markup of legal wholesale market jobbers, NACF jobbers and unlicensed wholesalers.
- /b Ninety percent of loans to fishermen totaling W 14,417,000.
- /c Sixteen percent of loans to fishermen.
- /d Three paid employees x W 225,000/employee/month x 12 months/year.
- /e W 6,000/day x 350 days/year for employee food; W 200,000/month x 12 months/year for other costs.
- /f Weighted average of legal jobbers and quasi-wholesalers: W 10,750/pyong/month x 7.6 pyongs x 12 months/year.
- /g W 195,000/month x 12 months/year.
- /h W 25,000/month x 12 months/year for electricity; W 10,000/month x 12 months/year for water.
- /i W 125,000/month x 4 months/year.
- /j W 11.83/kg ice x 0.1 kg ice/kg fish x 2,800 kg fish/day x 350 days.
- /k Weighted average of legal jobbers and quasi-wholesalers: W 554,000/stall. Interest is W 554,000 x 16% borrowed portion of operating capital x 30%/year interest rate.
- /l W 14,417,000 loans to fishermen x 16% borrowed portion of operating capital x 1 month average period of loan x 2.5%/month interest rate.
- /m Weighted average of legal jobbers and quasi-wholesalers: 0.26% of total transaction value.
- /n PY1, PY2 and first quarter PY3 cash flow values are identical to those of the "without project" case. Notes below refer to PY3 and beyond.
- /o W 786/kg x 1.01 quality premium in PY3 (1.02 in subsequent years) x 2,850 kg/day x 350 days/year at Garag-dong x 3% commission.
- /p In PY3 and PY4, 25% of each fish wholesale company's net cash flow after tax and depreciation reserve would be divided equally among its 95 jobbers. From PY5, this proportion would be 45%.
- /q Seventy-five percent of W 2,000,000 of shares purchased at the start of the second quarter of PY3.
- /r Weighted average of Seoul fresh fish stall security deposits, received from landlords at time of move to Garag-dong.
- /s Two paid employees x W 225,000/employee/month x 12 months/year.
- /t W 4,000/day x 350 days/year for employee food; W 200 000/month x 12 months/year for other costs.
- /u W 7,500/pyong/month x 9.1 pyongs x 12 months/year.
- /v W 47/kWh x 110 kWh/month x 12 months/year for electricity; W 110/cu m x 100 cu m/month x 12 months/year for water.
- /w W 500/pyong/month x 9.1 pyongs x 12 months/year.
- /x W 11.83/kg ice x 0.1 kg ice/kg fish x 2,8500 kg fish/day x 350 days/year.
- /y W 0.5/kg-day x 538,000 kg-days/year (269,000 kg-days in PY3).
- /z W 200,000/pyong x 9.1 pyongs.
- /aa Original security deposit debt of W 89,000 serviced at 30%/year interest, repaid at beginning of PY5.
- /bb Thirty percent per year interest on unpaid beginning-of-period balance. Amortization is in three equal payments at mid-PY4, start of PY5 and mid-PY5.
- /cc Contingency allowance of 10% of other costs at Garag-dong, excluding value added tax. Moving costs are W 400,000 in PY3.
- /dd One-eleventh of total transaction value at Garag-dong.

KOREA

AGRICULTURAL WHOLESALE MARKETING PROJECT

Financial Analysis  
(W'000,000)

Project year:	0 /a	1	2	3	4	5	6	7-9	10	11-19	20	21-24	25
<b>Benefits</b>													
<b>To Government</b>													
Value added tax /b	-	-	-	4,198	5,820	5,820	5,820	5,820	5,820	5,820	5,820	5,820	5,820
Corporation, defense, residence and welfare taxes /c	-	-	-	9,442	13,398	15,559	15,585	15,585	15,585	15,585	15,585	15,585	15,585
Subtotal	-	-	-	13,640	19,218	21,379	21,405	21,405	21,405	21,405	21,405	21,405	21,405
<b>To Garag-dong Agricultural Market Authority</b>													
Market use fees /d	-	-	-	3,053	4,120	4,120	4,120	4,120	4,120	4,120	4,120	4,120	4,120
Rents /e	-	-	-	2,548	3,397	3,397	3,397	3,397	3,397	3,397	3,397	3,397	3,397
Interest earnings /f	-	-	-	994	1,375	1,410	1,410	1,410	1,410	1,410	1,410	1,410	1,410
Parking /g	-	-	-	474	632	632	632	632	632	632	632	632	632
Chilled storage /h	-	-	-	52	105	105	105	105	105	105	105	105	105
Subtotal	-	-	-	7,121	9,629	9,664	9,664	9,664	9,664	9,664	9,664	9,664	9,664
Total Benefits /i	-	-	-	20,761	28,847	31,043	31,069	31,069	31,069	31,069	31,069	31,069	31,069
<b>Costs</b>													
Investment costs /j	13,560	21,235	26,920	12,672	-	-	-	-	17,000	-	22,700	-	(38,349)
Market Authority operating costs /k	-	-	181	2,785	3,537	3,903	4,269	4,543	4,543	4,543	4,543	4,543	4,543
Total Costs	13,560	21,235	27,101	15,457	3,537	3,903	4,269	4,543	21,543	4,543	27,243	4,543	(33,806)
Net Incremental Benefits	(13,560)	(21,235)	(27,101)	5,304	25,310	27,140	26,800	26,526	9,526	26,526	3,826	26,526	64,875
Net Present Value: W	57,004												
Financial Rate of Return:	28%												

/a Included in PY0 are all costs for land purchase and civil works incurred prior to loan effectiveness, inflated to the expected price level at the time of loan effectiveness.

/b VAT source is all wholesale companies and jobbers plus gas station and freezer company; incremental revenue is computed by subtracting NACF-Yongsan and average legal fish wholesale market jobbers' VAT payments.

/c Same sources as for VAT but excludes jobbers; Seoul Fruit and Vegetable Company (Yongsan) taxes are subtracted to yield incremental revenue.

/d Half of one percent of total transaction value, except shippers, who pay W 3,000 per use of the market. Jobbers pay no market use fee.

/e Generally W 7,500/pyong/month. Higher for freezer company (W 12,000) and gas station (W 10,000).

/f Security and tax deposits earn 16%/year.

/g W 500/space/day, except outside retailers (W 750) and shippers (W 1,000).

/h Jobbers pay W 0.5/kg-day, using about 50% of annual capacity.

/i Excludes increased income taxes, local taxes, shippers' and related-items shop taxes.

/j Investment costs exclude price contingencies. Residual value based on building and civil works useful lives of 50 years, and furnished equipment and materials useful lives of 10 years (for 75% of the costs) and 20 years (for 25% of the costs). Replacement of furnished equipment and materials is shown in PY10 and PY20.

/k Includes operating costs and excludes debt service, taxes, and depreciation reserve fund.

## KOREA

## AGRICULTURAL WHOLESALE MARKETING PROJECT

Economic Analysis  
(W'000 000)

Project year	0	1	2	3	4	5	6-9	10	11-19	20	21-24	25
<b>Benefits</b>												
Reduction in spoilage losses /a	-	-	-	5 684	9,480	9,480	9 480	9,480	9 480	9,480	9,480	9,480
Improvement in product quality /b	-	-	-	8,054	13,422	13,422	13 422	13,422	13,422	13,422	13,422	13 422
Reduction in transport delays /c	-	-	-	3,434	4,578	4,578	4 578	4,578	4 578	4,578	4,578	4 578
Cost savings from backhauls /d	-	-	-	2 735	6,382	9,117	9,117	9,117	9,117	9,117	9,117	9 117
Yongsan alternative land use /e	-	-	-	2,851	3,801	3,801	3,801	3,801	3,801	3,801	3,801	3,801
Subtotal	-	-	-	22,758	37,663	40,398	40,398	40,398	40,398	40 398	40,398	40,398
<b>Costs</b>												
Investment costs /f	12,204	19,110	24 228	11,405	-	-	-	15 300	-	20,430	-	(34,514)
Operation costs /g	-	-	-	-	-	-	-	-	-	-	-	-
Garag-dong Agricultural Market Authority	-	-	172	3,280	3,143	3 490	3,838	3,838	3,838	3,838	3,838	3 838
Fruit and vegetable wholesale companies	-	-	-	18,559	13,286	13,286	13 286	13,286	13,286	13 286	13,286	13,286
Fish wholesale companies	-	-	-	5,856	4,431	4,431	4,431	4,431	4,431	4,431	4,431	4,431
Fruit jobbers	-	-	-	(1,771)	(3,017)	(3,009)	(3,289)	(3,289)	(3,289)	(3,289)	(3,289)	(3,289)
Vegetable jobbers	-	-	-	(3,582)	(5,208)	(5,134)	(5 449)	(5,449)	(5,449)	(5,449)	(5,449)	(5,449)
Fish jobbers	-	-	-	71	(939)	(887)	(1,118)	(1 118)	(1,118)	(1 118)	(1 118)	(1,118)
Freezer company and gas station	-	-	-	1,645	2,194	2,194	2,194	2,194	2,194	2,194	2,194	2,194
Garag-dong agricultural production foregone /h	143	83	83	83	83	83	83	83	83	83	83	83
Yongsan conversion cost /i	-	-	1,550	1 550	-	-	-	-	-	-	-	-
Subtotal	12 347	19,193	26,033	37,096	13,973	14 454	13,976	29,276	13 976	34,406	13,976	(20,538)
<b>Net Incremental Benefits</b>	(12,347)	(19,193)	(26,033)	(14,338)	23,690	25 944	26,422	11,112	26 422	5 992	26,422	60 936
<b>Net Present Value:</b>	40 531											
<b>Economic Rate of Return:</b>	25%											

- /a Assumes spoilage losses in the market would be reduced from about 5.5% in fruit and vegetables and 2.3% in fish to 3.3% and 1.3%, respectively by PY4. PY3 savings would be 60% of those in PY4. Conversion factor estimated at 0.80.
- /b Higher prices for fresher products would reduce the quality loss rates from about 5.7% in fruit and vegetables and 3% in fish to 2.4% and 1.0%, respectively, by PY4. PY3 savings would be 60% of those of PY4. Conversion factor estimated at 0.80.
- /c From reduced idling cost and running time depreciation, about 40% of the total savings from reduced intramarket congestion, 48% from reduced congestion on roads adjacent to the market, and 12% from Garag-dong's proximity to producing areas. Conversion factor estimated at 0.95.
- /d Shippers normally return to producing areas with empty trucks. backhauling would save about W 120,000/trip. Half of the 714 trucks supplying the new market would begin backhauling by PY5, 35% would start by PY4, and 20% in PY3. Conversion factor estimated at 0.95.
- /e By conversion to a building supply area, Yongsan's value added would increase about 10%; it is now estimated at 11.3% of total transaction value (6% for fruit, 13.5% for vegetables). Conversion factor estimated at 0.95.
- /f Investment costs excluding price contingencies. Replacement of equipment and materials is provided for in PY10 and PY20, and PY25 shows the residual value of buildings, civil works, and furnished equipment and materials. Conversion factor estimated at 0.90.
- /g Incremental nontax costs of operating the market which can be related to the several economic benefits. Conversion factor estimated at 0.95.
- /h World price of rice CIF Seoul US\$481/MT (adjusted up US\$22.50 for local transport, storage and handling, and down US\$5.20 for farm-to-market transport) x 4.5 MT/ha x 54 ha x W 685/US\$1.00. PY1 cost includes price-adjusted sum of 1980/81 production value.
- /i Base cost of W 3.1 billion split evenly between PY2 and PY3. Conversion factor estimated at 0.90.

KOREA

AGRICULTURAL WHOLESALE MARKETING PROJECT

Schedule of Early Events

Activity	Date
Award main civil works contract	March 31, 1982
Study proposals for Bank review	September 1, 1982
Establish GAMA Steering Committee	October 30, 1982
Plan of action for closure of Yongsan and transfer to Garag-dong for Bank review	April 1, 1983
Draft GAMA regulations, and structure and levels of fees for Bank review	June 30, 1983
Appointment of Advisory Committee	July 1, 1983
Establishment of GAMA	September 30, 1983
Appoint key officers of GAMA	September 30, 1983



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Related Documents and Data Available in the Project File

A. Project File Papers

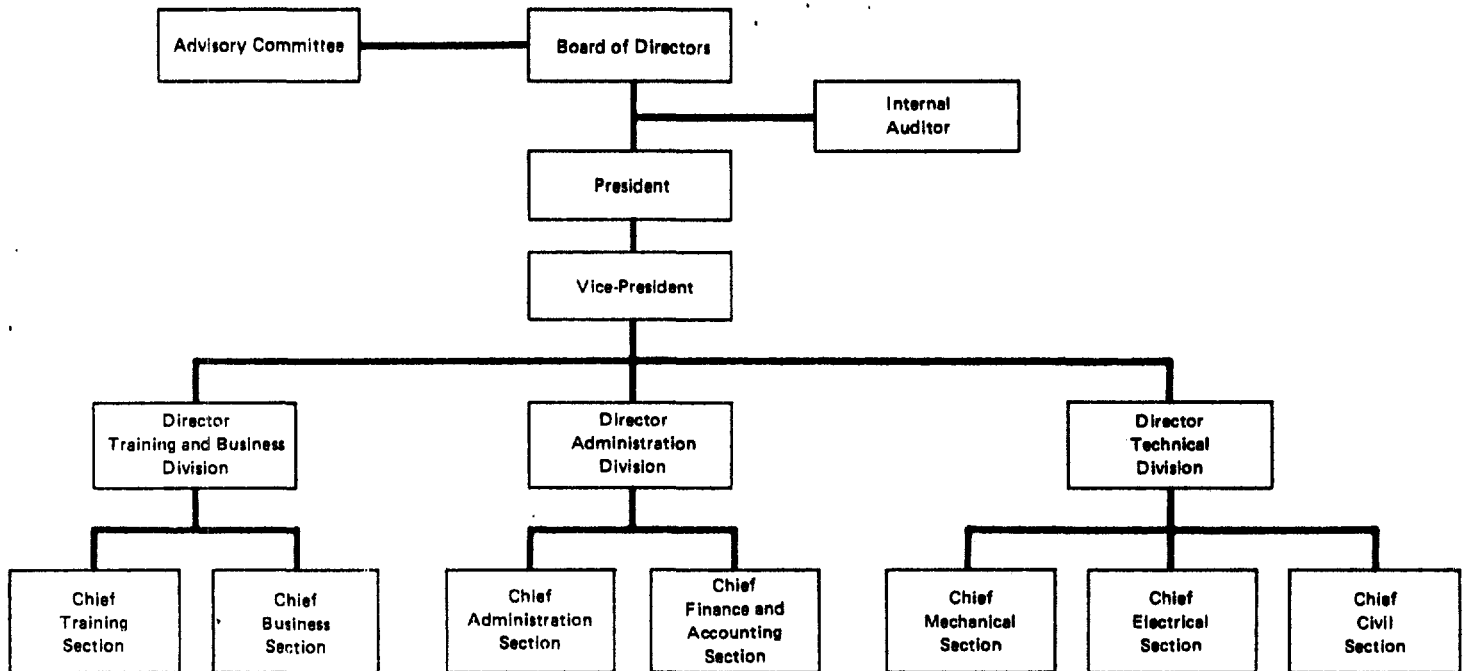
- A1 Horticultural and Marine Product Production, Marketing and Consumption Statistics (annual, regional and seasonal production; consumption trends and projections for Korea and Seoul, marketing margins and costs; price trends).
- A2 Garag-dong Market Architectural and Structural Features
- A3 Prevailing Agricultural Marketing Information System
- A4 Seoul Metropolitan Government Financial Conditions.

B. Relevant Documents

- B1 Agricultural Wholesale Market Planning and Preliminary Design: prepared by Han Yang Engineering Company.
- B2 Agricultural Wholesale Market Project: Cost Estimates March 1981. prepared by Seoul Metropolitan Government (Four Volumes).

Figure 4.1

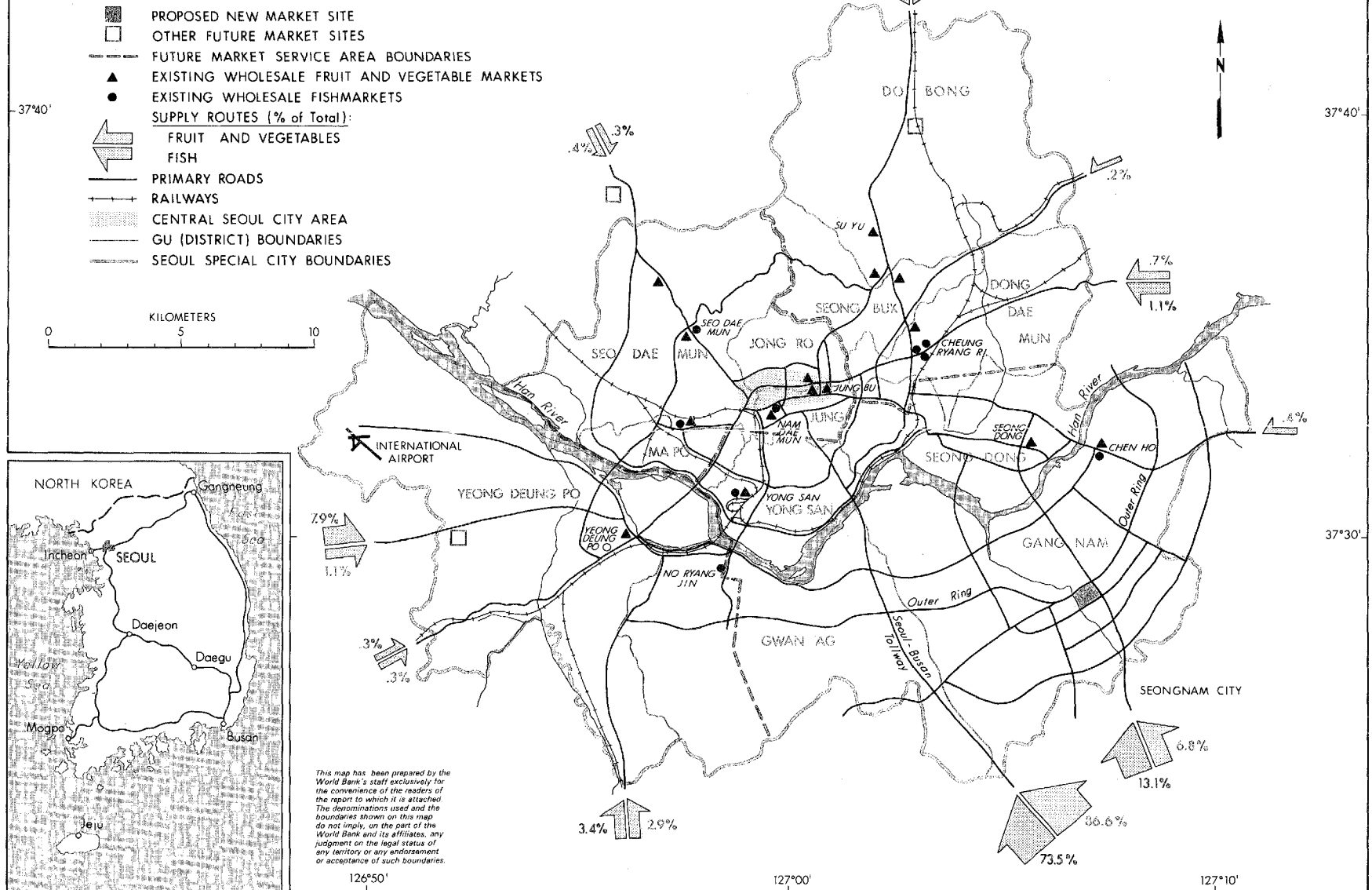
**KOREA**  
**AGRICULTURAL WHOLESALE MARKETING PROJECT**  
**Proposed GAMA Organization**



# KOREA

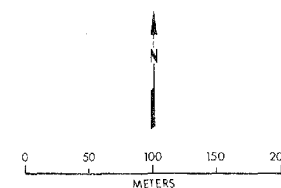
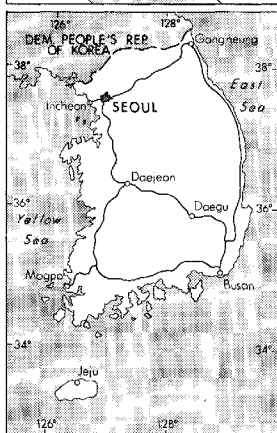
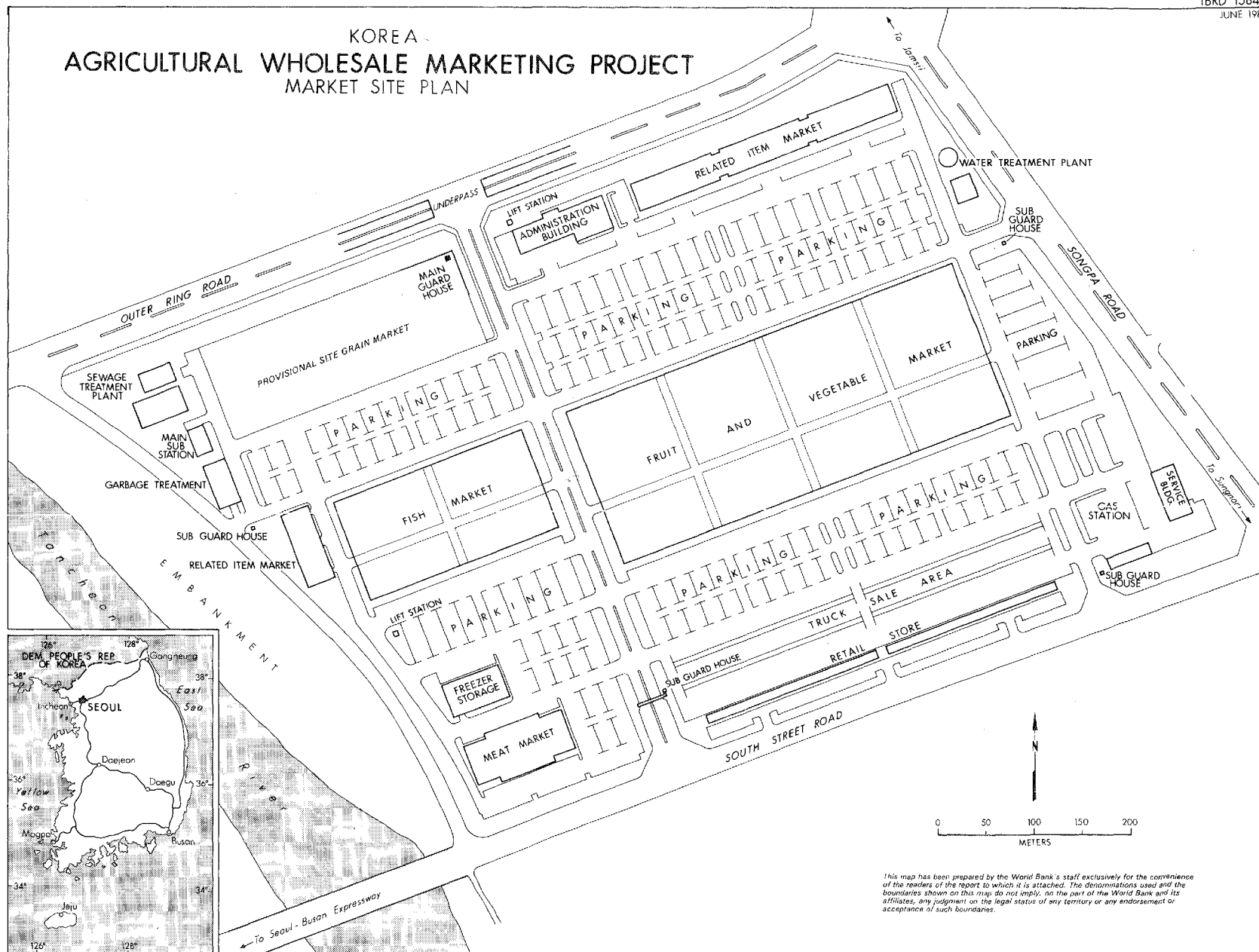
## AGRICULTURAL WHOLESALE MARKETING PROJECT

### CITY OF SEOUL





# KOREA AGRICULTURAL WHOLESALE MARKETING PROJECT MARKET SITE PLAN



This map has been prepared by the World Bank's staff exclusively for the convenience of the readers of the report to which it is attached. The denominations used and the boundaries shown on this map do not imply, on the part of the World Bank and its affiliates, any judgment on the legal status of any territory or any endorsement or acceptance of such boundaries.



